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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1929

(WITH BALANCE-SHEET FOR 1928),

BY THE

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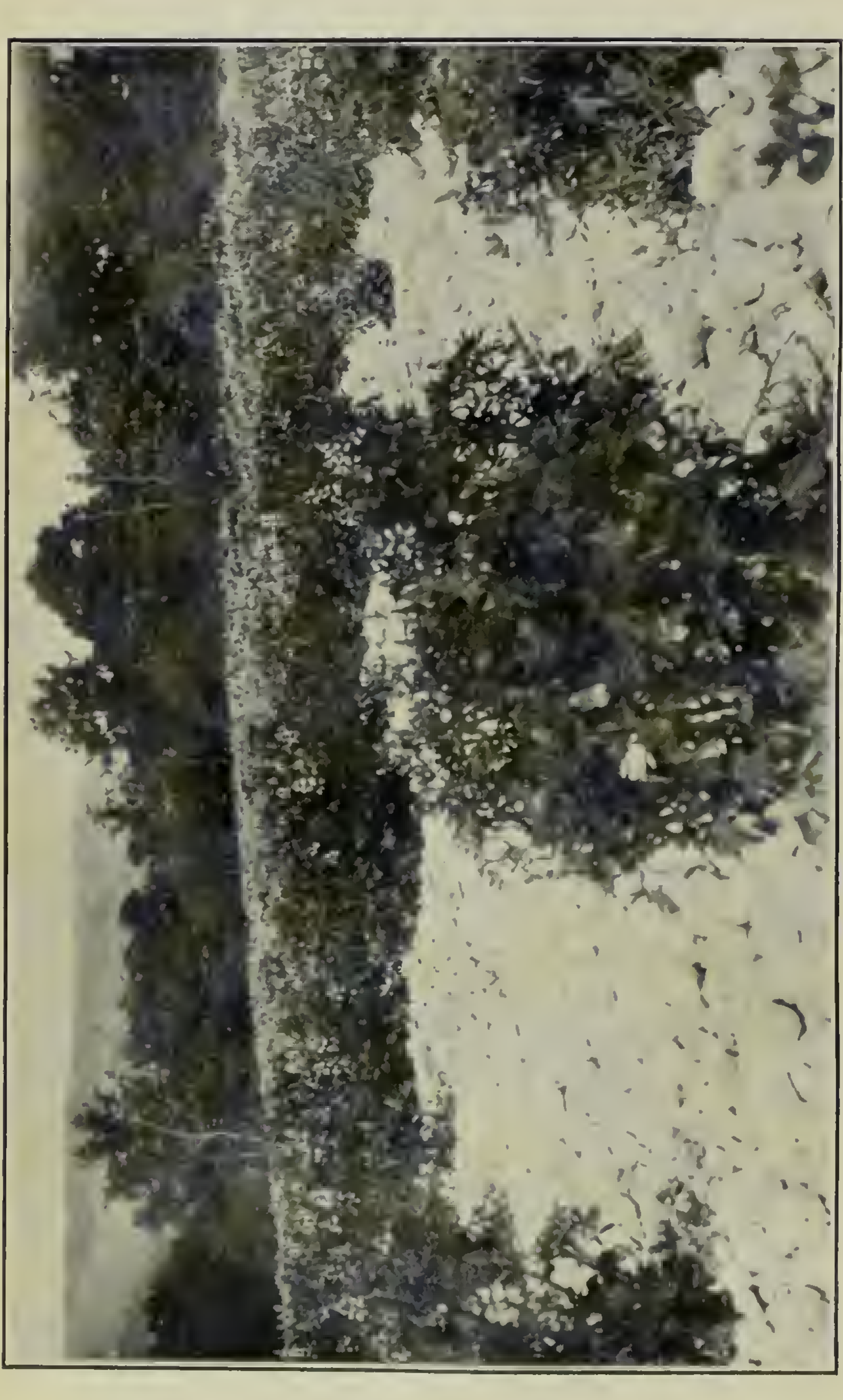

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†*Wilkinson, E. B.
Wilkinson, J. G.
†Wilkinson, Miss Maud.
Willan, Mrs Hugh.
†Williams, Ethel M.
Williams, Miss Lavender.
Williams, I. A.
†Williamson, R. H.
Willmott, Miss E., F.L.S.
†Wilson, A., F.L.S.
Winchester Coll. Nat. Hist. Society.
†Wise, W.
†Wolley-Dod, Lt.-Col. A. H.
Woodhead, Prof. T. W., Ph.D.
Wordsell, W. C.
†Wotherspoon, Miss.
Wright, F. R. Elliston.
Wynne-Edwards, V. C.

Young, Dr J. Stirling.
Young, F. S., M.A.
†Young, Miss Gertrude.

THE

BOTANICAL SOCIETY & EXCHANGE CLUB OF THE BRITISH ISLES.

THE REPORT OF THE SECRETARY & TREASURER,

G. CLARIDGE DRUCE, YARDLEY LODGE, OXFORD,

FOR 1929.

BALANCE-SHEET FOR 1928.

	£	s	d		£	s	d
Subscriptions received,	£270	17	0	Printing Reports, &c.,	£243	16	8
Sales of Reports and Advertisements,	38	0	0	Expenses of Distribution,	2	15	9
Life Members,	14	0	0	Critics, Typing, etc.,	13	19	1
Balance from 1927,	42	19	4	Postages, Carriages, etc.,	27	13	6
				Benevolent Fund,	20	0	0
				Balance,	57	11	4
	£365	16	4		£365	16	4

Balance carried forward, £57 11s 4d.

PUBLICATION FUND.

	£	s	d		£	s	d
Balance from 1927,	£31	12	6	Balance,	£45	3	4
Sales, 1928,	6	5	0				
Do. 1929,	1	8	0				
T. Buncle & Co.—Sales,	4	7	10				
Advertisement,	1	10	0				
	£45	3	4		£45	3	4

Balance in hand, £45 3s 4d.

Life Members' Fund, £102 1s 0d. Benevolent Fund, £59 3s 6d.

THE TROWER FUND.

	£	s	d		£	s	d
Donation from Miss C. G. Trower,	£150	0	0	Printing and Plates,	£133	12	1
				Balance,	16	7	11
	£150	0	0		£150	0	0

Balance carried forward, £16 7s 11d.

Examined and found correct.—F. A. Bellamy, F.R.A.S., 20th December 1929.

MEMBERS' SUBSCRIPTIONS.

May the Treasurer appeal to the members (1) to pay their subscriptions in January for the current year when they become due. (2) If they wish to resign to let him know before the end of January. The failure of this act of courtesy gives great additional trouble and expense which really has to be unfairly borne by the other members. Payment for three years is strongly urged.

The year 1929 was, in many ways, an annus mirabilis. The intense and prolonged cold of the first three months was devastating to the very old during the time the frost had such a hard grip upon the earth. Over a very large area of the Midlands and southern England, there was a practically rainless summer (oddly enough, wherever I went there was rain), and this prolonged drought had a marked effect upon vegetation. Despite the small amount of rain during the first eight months, the torrential downpour of the later period of the year resulted in an almost average rainfall for the year.

Perhaps due in part to the lower winter and spring temperature which retarded vegetative growth, and in a greater degree to the long spell of almost unbroken sunlight and the higher temperature of the summer, there was a profuse flowering of certain plants, especially shrubs and trees. Rarely have certain species shown a greater magnificence of bloom. The glorious inflorescences of *Laburnum*, *Pyracanthus* and Hawthorn have rarely been excelled, and never have I seen such a harvest of beech-mast. So plenteous and heavy was it as to weigh down the branches nearly to breaking point. The Wayfaring Tree and Spindle Tree, too, were in most prolific fruit, but the Dog-roses were not so showy.

The flowers of *Achillea Millefolium*, *Pulicaria dysenterica*, *Lychnis alba*, *Anthemis arvensis*, and the Dandelions were exceptionally abundant, and gladdened the eye with their splendour. The dried-up ponds also offered a splendid show of *Myosotis*, *Alopecurus aequalis*, Chenopods, and Polygonums on their exposed mud.

The year has not been marked by exciting discoveries, but steady progress has been made in the study of Jordanons, some new Rubi have been described, and several Erophilas new to Britain are enumerated in this Report. Mrs Wedgwood found a new *Alchemilla—controversa* on Cave Hill, Belfast. I found a new hybrid Thyme on the downs above Bowood in Wilts, and subsequently gathered it on Selsey Common, in Gloucestershire. A well-established alien species was found by the Rt. Hon. H. J. Baker at Mells, in Somersetshire, which I went to see. We found a considerable growth of it high up on one side of a wooded valley. It is *Scutellaria Columnae* All., but one could not arrive at any conclusion respecting the means of its introduction. Many other Adventives were found by the writer and Sir Roger Curtis on the rich area of Burton-on-Trent. One of the more interesting species, which from a short distance one thought was *Tordylium*, was *Coriandrum Tordylioides*, a rare Syrian species, easily known by its fruit. Growing with it was *Carthamus tenuis* Bornm. Mr Colin Trapnell found a new variety—*microcarpa*—of *Erophila* on the Berkshire Downs, and Mr W. Watson identifies a Berkshire *Rubus* found by me as *R. egregius* Focke. Miss Maud Wilkinson and Miss Owen noticed a Thistle in N. Devon which they thought to be *tuberosus*. I went to see it growing and found it to be the hybrid, *palustre* × *pratense* = *C. spurium* Delarb. Four specimens were noticed in a rough field above Kings Nympton with quantities of the putative parents. Col. H. H. Johnston, who has recently undergone a severe operation, has two new Hawkweeds from Hoy, which Dr Dahlstedt names *Hieracium subalpestrifrons* and *H. dasypodon*. A variety of *Euphrasia borealis*, which he found in Fetlar, Mr Pearsall names as a new var.—*atropurpurea*. I found the same form in Unst.

Among Adventive Chenopods I have added ×*C. Probstii* from Galashiels, with Miss Hayward, ×*C. succicum* from Oxford, Selkirk, etc., as well as *C. Zobelii*. Mr J. Fraser has named a hybrid *Mentha* from Aberdeenshire.

In 1912, I gathered in Lady Victoria Russell's garden at Shere an *Equisetum*, then pushing its way through a gravel path. I could make nothing of it but *hyemale*, which was on record for Surrey. Recently Lady Davy saw it there, where, in the 17 years which have elapsed, it had much increased, even spreading into an adjoining field. She thought it was different from the Weston-super-Mare plant. We went over to see it and its present state left no room for doubt about its distinctness. It is a species of Western France—*occidentale*. Mr C. E. Salmon sent several specimens of *Glyceria distans* to Prof. Holmberg, who says they include the true *distans* and *retroflexa*. It may be said that *retroflexa* is based on Curtis's plate of *Poa retroflexa* in the *Flora Londinensis*. The true *distans* was so named for me by Hackel, many years ago.

Last January, I tried to get out of the cold, and took a passage on the "Highland Monarch" to Gran Canaria, where we had sunshine and warmth. Even then there were many flowers out and, in the Municipal gardens, Roses, Heliotrope, Bignonia and Pelargonium grew galore. We made many expeditions into the hills, but there the season was too early for most things, but we got the *Habenaria* for which only a few localities are cited in Pittier's Flora, in many places. It grows out of rock-fissures as well as on dry banks. We had the advantage of Mr Trethewy's company on our visit. At Tamaraceite we added *Fumaria Bastardi* to the Flora of Gran Canaria, as well as *Bursa patagonica*, *B. mediterranea* and *B. provincialis*. To Teneriffe we added *B. concava* and *Chenopodium giganteum*. For several days we had an uninterrupted view of the Peak, and found the special species of *Pancratium*, and the beautiful grass, *Tricholoena rosea*, with its red panicle and florets, and masses of *Habenaria tridactylites* in the Mercedes Forest. We only went up to about 5000 feet on the Peak, but even at that height there was too much snow to encourage a botanist. The curious Composite, *Siegesbeckia orientalis*, which has recently occurred near Formby in Lancashire, is naturalised near Orotava. Signora Perez showed me several hybrids of

Limonium in her large garden. The greater part of our gatherings still remain unnamed. The cliff drive from Orotava to Buenavista was magnificent, and the quantities of *Sempervivum* and *Sedum* were remarkable. *Tabellare*, a most curious species, was plentiful.

In May, a party of our Society were the guests of the Hon. Mr and Mrs Colborne Vivian, at Bosahan. It included Mr Justice Talbot, Sir Roger Curtis, Miss Clarice Vivian, Hon. Mrs and Miss Baring, Lady Alethea Buxton, Miss D. Meynell, Miss Butler, etc. We had the advantage of the company of Mr Rees, who showed us the treasures at Hayle, where *Ajuga genevensis* looked quite at home. *Pinguicula grandiflora* was in good blossom in its old station. *Trigonella Ornithopodioides* was flowering well in the gravel carriage drive at Bosahan. Most of the Lizard plants were seen, but the rare Trefoils were not in flower.

In early June a visit was made to Malvern, where we are glad to say *Sagina Reuteri* is still to be found. Mr Bickham's garden at Ledbury was in magnificent condition. At Tewkesbury the Woad exists, but in smaller quantity than in former days. A visit was paid to Major Guthrie Watson at Culeaze, Dorset, when, despite the rain, some species were added to the Dorset flora. Towards the end of the month another party of our members was entertained by the Earl and Countess of Buxton at Newtimber, in Sussex, which included Lord and Lady Rayleigh, Hon. Sydney and Lady Delia Peel, Hon. Miss and Hon. Jean Elphinstone, etc., where *Phyteuma spicatum* was seen, as well as the treasures of the Lewes levels, Cuckmere and Newhaven.

Then I went on to Bowood, where another group were entertained by the Marquess and Marchioness of Lansdowne, the guests including Mrs H. Graham, Lord and Lady Henry Bentinck, Lady Gwendolen Churchill, and Rt. Hon. H. J. Baker. We saw *Euphorbia pilosa*, under Mr Green's guidance, at Bath, and *Potamogeton Drucei*, *Astragalus boeticus* and a new variety of *Hieracium maculatum*. Another day was devoted to Clifton Gorge and Durdham Downs. *Polemonium* was seen near Calne, and on the chalk uplands above Bowood grew a new hybrid Thyme = × *T. Lansdowneiae* already alluded to.

From Bowood, Mr H. J. Baker took me to see the *Scutellaria* which he had recently gathered there, and of which we found a large patch some two hundred feet above the valley level. *Hieracium Pulmonarioides* was also in the same valley, the seeds having probably been wind-borne from Mells, where it is abundant on the bridge and on many walls and cottages. *Heracleum Mantegazzianum* and *Symphytum peregrinum* were plentiful. Here we were the guests of Lady Horner, who kindly took us to the large wood of Asham, where an Eyebright, probably a new species, and the new British *Hieracium acuminatum* Jord. were found.

Sir Roger Curtis then fetched me to go to Burnham-on-Sea, where another group of botanists worked the district and saw *Orchis hircina* and *Sisyrinchium angustifolium*. *Hieracium maculatum* was at Highbridge with some adventives. Cheddar and its neighbourhood were visited. *Carex depauperata* was in fine fruit, and *Lithospermum purpureo-caeruleum* was common. Purn was visited for *Cerastium pumi-*

lum and the hybrid, *Helianthemum sulphureum*, and Uphill showed us *Koeleria vallesiana*, *Trinia*, etc., while Weston-super-Mare still has abundance of *Equisetum variegatum*. There, too, grew *Orchis praetermissa* and several hybrid Willows.

We then motored on by Bristol to Yate and Wickwar, and thence to Stroud, where *Cephalanthera rubra* was not to be seen. Selsey Common had, however, *Herminium*, and there we picked the same hybrid Thyme that occurred in Wiltshire. There is *Hieracium Sublepistoides* in the wood. We then motored to Lichfield, where ×*Potamogeton Cooperi* was still plentiful. Near Burton-on-Trent, Sir Roger showed me the newly-discovered *Aconitum anglicum* for Derbyshire. At Burton a very large number of adventives were gathered—160 species in all.

A flying visit was then made to Ireland, leaving Rugby on Sunday evening for Dublin, where the meeting of the British Pharmaceutical Conference was held. The last meeting held there was in 1901, when the writer was the President. On this occasion, after the Presidential address by Mr Bennett, he received an ovation, which lasted for several minutes, on his rising to propose a vote of thanks to the President. He was then motored to Avoca to see the Walpoles' beautiful garden with its marvellous collection of rare plants in magnificent flower. Motoring back to Kingstown, I was enabled to reach Oxford by 7 a.m., in time to attend the Encaenia when Lord Grey presided.

In early August, Mr P. M. Hall and I explored southern Hampshire. *Spiranthes* was flowering in the New Forest. On August 11, I went northwards to stay with Lord and Lady Elphinstone at Balnaboth in Angus. The weather was very bad, but *Cicuta* and other plants were seen at Rescobie, and in Glen Prosen *Juncoides nemorosum* and *Poa Chaixii* were observed. The visit to Glen Dole showed the usual plants, but they were in poor condition. Then I went on to Inchdowrie, in Glen Clova, but continuous rain prevented real work. I then went south to Thirsk, where I had some interesting excursions with Mr and Mrs Foggitt. At Castle Howard, *Acorus* was flowering freely. A visit to Teesdale showed *Saxifraga Hirculus*, poor in condition and quantity. At Hovingham, some fields had been dressed with shoddy-waste and some Chenopods were observed. Ashkam showed *Calamagrostis Calamagrostis* and *Ranunculus Lingua* in fine condition, and Strensall its lovely *Gentiana Pneumonanthe*. Skipwith Common had masses of *Rumex maritimus* and ×*R. limosus*. Market Harborough was visited to study *Potamogeton decipiens*, which is common in the canal there. The Naze estuary was explored in July. A visit to Wales afforded a sight of *Potentilla rupestris* still in existence. A short visit to N. Devon to see the Thistle already mentioned showed that *Polygonum polystachyum* is completely naturalised between Barnstable and Linton. *Hieracium porrigens* was seen in the locus classicus and in Woody Bay we saw *Gentiana campestris*. In October I met Lady Davy to see *Cyperus longus*, which the Rev. D. M. Heath had recently found there. I think it has been introduced. Later I went to Reigate to lunch with our late member, Mr C. E. Salmon, who was then looking extremely well.

In October I went north to Newcastle to attend the very fine and successful Centenary Meeting of the Hancock Museum, under the Presidency of Viscount Grey of Fallodon. I presented addresses of congratulation on behalf of (1) the University of Oxford, (2) the Ashmolean Natural History Society of Oxfordshire, and (3) our own Society. Addresses were given by Lord Armstrong, etc. In the evening I attended the dinner, at which Lord Grey, Sir Charles Parsons and others were present. The following week I was present at the Gas Conference at Eastbourne, which was extremely satisfactory. The town was unusually gay owing to the visit of the Duke and Duchess of York to open the new and extensive area of Downland, recently acquired by the town.

The Publications of the year are reviewed in subsequent pages. One of the most successful is Miss McKelvey's work on "The Lilac," alike pleasing for its illustrations and for its literary research. *Nature*, the *Gardeners' Chronicle*, the *Journal of Botany* and the *Naturalist* have much of interest in them.

The new members include:—Miss Abell, Mr Gerald Ash, Mr E. Leigh Atkinson; Lady Baker, A.R.A.; Mr C. M. Baker, Lady Charles Bentinck, Lord Henry Bentinck (1930), Dr K. Blackburn, H. H. Maharajah of Burdwan, Hon. Mrs Campbell, Miss E. C. Claydon, Mr Robert Courthope, Mr John Cripps, Mr Henry Forster, Mr J. H. Gladstone, Mr W. B. Gourlay; Mr Robt. Gurney, D.Sc.; Mrs Harford; Rev. J. L. Hooppell, F.S.G.; Major C. C. Hurst, Ph.D.; the Lord Joicey, Mr R. Kempthorne, Miss Lane Fox; Mr C. Leighton Hare, B.Sc.; the Lady Lilford, Miss D. Mander, Miss H. L. Overy, Mrs Payne, Mr M. Qongur, Mr E. M. Redhead, Mr E. Rees, Rev. S. O. Ridley, Mr R. W. Robbins, Prof. R. Robertson, Mr R. H. Sargent; Sir Samuel Scott, Bart.; Mr T. W. Southron, Torquay Natural History Society, Mr W. G. Trower, Miss Maud Wilkinson, Miss Wotherspoon, Mr Bernard T. Ward (1930), Prof. Scott Watson (1930).

Our death roll has been very heavy. In the loss of Mr Arthur Bennett and of Mr C. E. Salmon have passed away two of our best botanists. Both had acted as our referees for many years. One was the specialist in Pondweeds, and the other in Sea-lavenders. Besides these, we regret the loss of that enthusiastic gardener, Sir Alexander Buchan Hepburn, Bart.; H.H. Maharajah of Jhalawar, an enlightened patron of learning; the Countess of Fortescue, once Lady-in-Waiting to the Queen; the Countess of Dartmouth, Mr Alexander Roberts, Mr E. Salow Allen, Mrs Russurum, Miss Alice Trower, Canon Benwell, Mr J. Cosmo Melvill, a most generous donor to Manchester University; and Mr R. W. Goulding, the very able librarian at Welbeck, whose notes frequently enriched these pages. These are indeed heavy losses, and it will be well nigh impossible to replace them. "The Flora of Surrey" has had an unfortunate history. It was begun by Mr Beeby over half a century ago. His material was put into Mr Salmon's hands to complete. Towards it Mr Salmon had amassed much material, and a large portion of it is already printed. Now another change of editorship has to be made and further delay must necessarily be incurred.

Among many changes that have taken place is the transference of Prof. Dr Walker Stiles from Reading to the Chair of Botany at Birmingham, lately filled by our genial member, the late Prof. Yapp. Mr J. R. Matthews has been chosen to occupy the Chair at Reading.

We offer our best wishes to Captain John Ramsbottom, O.B.E., Hon. Secretary of the Linnean Society, on his accession to the Keepership of Botany in the British Museum, Crowwell Road; also our sincere congratulations to Dr L. Cockayne on receiving the Darwin medal of the Royal Society, and Mrs O'Callaghan on her receiving the Grenfell medal (1930) for her beautiful paintings of British plants.

To the authorities of the Royal Botanic Gardens at Kew and Edinburgh, and of the Natural History Museum at Cromwell Road, we are indebted for help. Among foreign botanists we are grateful to M. Patrice Riencourt de Longpré for determining the Leguminosae, Prof. O. E. Schulz for naming the Cruciferae, Dr Ronniger the Thymes, Dr Almquist the Shepherd's Purses, Dr J. Murr and Dr P. Aellen the Chenopods, Dr R. Danser the Polygonaceae, Dr Dahlstedt the Dandelions, Dr F. Jaquet the Alchemillas, Dr Probst the Adventives, Dr K. Zahn the Hawkweeds, and Prof. J. Holmboe.

To Dr S. Howard Vines, F.R.S., the Rev. F. Bennett, Mr T. Gambier-Parry, and Mr R. H. Corstorphine we are indebted for literary help; and for critical examinations of British species we are very grateful for the kindness shown by Mr J. Fraser, Dr E. Drabble, Mr C. E. Britton, Mr W. H. Pearsall, Col. A. H. Wolley-Dod, Rev. H. J. Riddelsdell, Mr W. Watson, Mr D. Lumb, Mr A. E. Wade, Mr R. Butcher, Mr I. A. Williams, the late Mr C. E. Salmon, Mr W. O. Howarth, Mrs Gregory and Mr P. M. Hall.

ADVISORY COMMITTEE.

In case of the Secretary vacating his position, the following members will act in choosing a successor:—Rt. Hon. Harold T. Baker, Hon. Mrs G. Baring, Mr R. H. Corstorphine, Sir Roger Curtis, Mr C. E. Britton, Lady Davy, Mr and Mrs Foggitt, Mr P. M. Hall, Mr W. H. Pearsall, Miss Vachell, and Mrs Wedgwood.

PLANT NOTES, ETC., FOR 1929.

(*Mostly New Plants to the British Isles or Notes on British Species inserted here for Convenience of Reference.*)

ABBREVIATIONS.—† before a name signifies the plant is not native; × = a hybrid; ± more or less; ! after a locality, that the Secretary has seen the plant there; [ ] that the plant is not British or the record is doubtful; *Ann. Bot.* = *Annals of Botany*; *Bot. Abstr.* = *Botanical Abstracts*; *Gard. Chron.* = *Gardeners' Chronicle*; *Ir. Nat.* = *Irish Naturalist*; *Journ. Bot. or J. of B.* = *Journal of Botany*; *Nat.* = *The Naturalist*; *N.W. Nat.* = *North Western Naturalist*; *Ph. Journ.* = *Journal of the Pharmaceutical Society*.

6/4. RANUNCULUS AURICOMUS L., var. CERVICORNIX Kittel. Ham, Wilts, and Berks, June 1929, G. C. DRUCE.

6/22. R. TRICHOPHYLLUS Chaix. A variety, with glabrous carpels, in the ditches near Burnham, N. Somerset, July 1929, G. C. DRUCE.

Var. GODRONII (Gren.). Martin Mere, S. Lancs, F. W. HOLDER; Brickhill, Bucks, G. C. DRUCE, the latter "an unusually robust form with densely hairy carpels. The submersed leaves are very much like those of the rarer *sphaerospermus*. The flowers are too small and the pedicels much too short for that species."—W. H. PEARSALL.

Var. SUBMERSUS Bab. Castle Ashby, Northants, G. C. DRUCE.

6/27. R. SPHAEROSPERMUS Boiss. & Bl. Cuxham, Oxford, *locus classicus*, small plants about nine inches long. Transplanted to a tank in my garden, in a few weeks they grew so rapidly as to fill the tank. Specimens of this lax plant were reported (29/7/29) by Mr PEARSALL as "an extremely interesting *sphaerospermus* grown under abnormal conditions of water, and especially of light. These have 'stretched' the internodes, peduncles and segments of the leaves. The regular disposition of the leaves, the size of the non-converging petals, and especially the carpels (few, but very characteristic) are well shown. Type examples, in great abundance, but then immature, from Winterborne Steepleton, June 7, 1929, with Major GUTHRIE WATSON.

21/2. PAPAVER RHOEAS L., forma ROSEA Druce. Normal plants, with pale pink flowers as in *Malva moschata*, at Crab Tree, Hants, Rt. Hon. H. BAKER.

34/2. ×Cheiranthus Allionii Hort. = × Erysimum Allionii = E. ochroleucum × Perofskianum F. & M. Alien, garden hybrid. Waste ground, Kennington, Berks, 1929, G. C. Druce.

35/4. Radicula islandica (Oeder) Druce, forma laxa (Rikli), teste O. E. Schulz. On the mud of a dried up reservoir at Byfield, Northants; Clattercut, Oxon, G. C. Druce.

43/1. Draba Aizoides L., var. montana Koch Syn., 62, 1835, excl. Syn. Host. Planta plerumque validior, fructifera, usque 15 cm., alba. Flores paulo majores quam in planta typica. Pennard Castle. We seem to lack the type in Britain. The *E.B.* Plate is a mixture, not true *Aizoides*.

43/2. D. rupestris R. Br., var. b. leiocarpa O. E. Schulz Das Pflanz., 224, 1927. Siliculae subglabrae vel glaberrimae; pedicelli interdum glabri. = var. alpicola Hook. Fl. Scot., 197, 1821, non Wahl. Ben Lawers, Greville; Cairngorms, Hooker.

Var. c. bracteata O. E. Schulz, *l.c.* Folia caulina 5, oblongo-ovata, utrinque 1-denticulata, infima 1 cm. longa, sensim breviora et angustiora, omnia bracteiformia; pedicelli inferiores fructiferi, 1.2 cm. longi. Ben Lawers, Dickson.

43/3. D. incana L., var. nana Lindb. (var. gracilis (Ar. Bennett non Meyer)). Plants very small, 1 inch, on the shell-sand at Mellon Charles, W. Ross, and at Tain, East Ross. On the sugar limestone at Cronkley, N.W. Yorks; Widdy Bank, Teesdale, Durham; on the Serpentine at Balta, Unst, Zetland; Craig Cailleach, Ben Lawers, Mid-Perth; Ben Bulben, Sligo (A. G. More)! Often mistaken for *D. rupestris*. Planta pusilla; caules 1.5-10 mm. longi, simplici vel ramosi, parvifolia, rarissime aphylli. G. C. Druce.

44/2. Erophila praecox (Stev.) DC., var. microcarpa O. E. Schulz. On ant-hills, Park Farm Down, Berks, alt. 600 ft., C. G. Trapnell. Det. O. E. Schulz.

54/2. Brassica Napus L. = B. campestris L., f. auriculata DC. Burton-on-Trent, Staffs, G. C. Druce. Det. O. E. Schulz.

Var. syntomocarpa O. E. Schulz. Didcot, Berks, July 1929, G. C. Druce. Det. O. E. Schulz.

56/2. Eruca Eruca (L.), var. eriocarpa (Boiss.). Burton-on-Trent, Staffs, G. C. Druce. Det. O. E. Schulz.

Var. (proles) longirostris (Uechtr.). Burton-on-Trent, Staffs, G. C. Druce.

59/20(2). Bursa pergrossa (E. At.). Wilcote, Oxon, June 1929, G. C. Druce. *B. pergrossa* was originally found at Bremen by Dr Almquist, teste E. Almquist.

61/25. Lepidium ramosissimum A. Nels., var. robustum Thell. Hovingham, N. Yorks, G. C. Druce, teste O. E. Schulz.

65/7. Iberis odorata L. Alien. Greece, etc. Burton-on-Trent. Staffs, G. C. Druce. Det. O. E. Schulz.

88/14. Viola contempta Jord., nov. var. patula E. Drabble in Journ. Bot., 74, 1929. Known from the type by its widely spreading, more or less prostrate habit. Shere, Surrey; Crowborough, Sussex; Chesham, Bucks; Purwell Field, near Hitchin, Herts.

89/1. Polygala serpyllifolium Hose, var. decora C. E. Salmon in Journ. Bot., 193, 1929. Cwm Glas, Carnarvon, 1890, H. T. Mennell; Dalnaspidal, Perth, 1922, C. E. Salmon; Braemar, Aberdeen; Ben Bulben, Sligo; Caenlochan Glen, Angus, 1916; Glen Fiagh, 1905, G. C. Druce. This, doubtless, is my var. majus from O'Connor Hill, gathered in 1902, and from Glen Aan, Banff, in 1888.

101/7. Stellaria graminea L. Hogsback, Surrey, G. M. Ash. A form with sepals wider, petals shorter, some with rounded points, and having more numerous flowers . . . some flowers double, others apetalous.

117/2. Malva sylvestris L., var. violascens W. B. Turrill in Gard. Chron., 164, 1929. Somerset, H. Whitley. I have seen var. caerulea Dr. near Burnham, in Norfolk, which is of a chicory-blue colour, but as it is a colour form whose permanency under culture has not been proved it is not given in my *List*.

[127/6. Geranium Endressi J. Gay, var. Armitageae W. B. Turrill in Gard. Chron., 164, 1929. Cultivated at Dadnor, Ross, by Miss Armitage. For notes on *Geranium Endressi* see *Journ. Bot.*, 44, 88, 1928.]

138/1. Rhamnus Frangula L. With proliferous flowers and foliose petals at Wisley Common, Surrey, N. K. Gould. See *Journ. Hort. Soc.* xxxvii., 1928.

142/2. Acer campestre L. (hebecarpum), nov. var. trilobata Druce. Leaves three-lobed, 5 cm. long × 4.75 cm. in broadest part, the centre lobe 3 cm. long by nearly 2 cm. broad, the lateral 3.25 cm. long × 1.40 cm. broad. A very few leaves show signs of a slight incipient lobe. From large tree, Cranborne, Dorset, G. C. Druce.

183/10. Prunus lusitanicus L., with the var. myrtifolia. Alien, W. Europe. Naturalised by the road-side, Hascombe Hill, near Cranleigh, Surrey, 1929, R. Grierson.

185/1. Rubus idaeus × ulmifolius. Hungerford Park, Berks. In *Rep. B.E.C.*, 726, 1922, I alluded to an extraordinary Bramble found by Major Bates Van de Weyer, in which the ripe fruits separate from the receptacle, are dull red in colour, and have the flavour of Raspberry. It is not a sub-erect species. The stems root at the tips, but I can see no evidence in the leaf or stem of *idaeus*. G. C. DRUCE. Mr W. WATSON says:—"The completely septenate leaf and the felted drupelets point unmistakably to the presence of *idaeus*. *R. idaeus* has felted carpels, but none of the blackberries have; I think the other parent is *ulmifolius* not *caesius*. Vide the long panicle and strong based prickles. This hybrid has not, I think, been reported previously, either in this country or abroad. Usually *R. idaeus* is out of flower when *R. ulmifolius* begins to flower."

185/47. R. ULMIFOLIUS Schott, var. CONTRACTIFOLIUS (Sudre). So named by W. WATSON. Hunsbury Hill, Northants, September 1929, G. C. DRUCE; Bromley, Kent, W. WATSON.

185/ . R. MACROSTACHYS P. J. M., teste W. WATSON. Sussex, as ERICETORUM. Not the real *ericetorum* Lefèvre (the bramble which Rogers published as *R. Radula*, sub-sp. *anglicanus*), nor is it the Bramble which Rogers issued as *R. Lejeunii*, var. *ericetorum* Lef. It is, I think, pretty certainly *R. macrostachys* P. J. M., which Focke says he received from Rogers as *anglicanus*. It agrees splendidly with P. J. M.'s own description, and with Sudre's description. It is not, of course, *R. fuscus*, var. *macrostachys* Rogers. W. WATSON.

185/72. R. LASIOCLADOS, var. ANGUSTIFOLIUS × PYRAMIDALIS, teste W. WATSON. A very beautiful plant growing with the parents near Bagley Wood, Berks, G. C. DRUCE.

Var. ANGUSTIFOLIUS × VESTITUS, teste W. WATSON. Bagley Wood, Berks, G. C. DRUCE.

185/73. R. EGREGIUS Focke. Boars Hill, Berks, G. C. DRUCE. Det. W. WATSON.

190/4(2). ALCHEMILLA HETEROPODA Buser in Ber. Schweiz. Bot. Ges iv., 73, 1894. Caenlochan, Angus, 1915, Mrs CORSTORPHINE. See C. E. Salmon in *Journ. Bot.*, 13, 1929.

190/7. A. TENUIS Buser. Boxwood, Herts, June 12, 1911, J. E. LITTLE. This was probably a mixed gathering since Mr C. E. Salmon says his specimen is not *tenuis*, but M. Jaquet, having again examined my specimen, agrees that it is *tenuis*.

190/8(2). A. ACUMINATIDENS Buser in Bull. Herb. Boiss., ser. 2, ii., 624-6, 1902. By the Spey at Aviemore, Easterness, Miss I. M. ROPER. See C. E. Salmon in *Journ. Bot.*, 14, 1929.

190/8(3). A. CONTROVERSA Buser et Jaquet. Cave Hill, Belfast, Mrs WEDGWOOD. "Identical with my Fribourg specimens determined by Buser and myself after his controversy with me."—F. JAQUET.

191/3. Agrimonia Eupatoria L. With white flowers in Berkeley Vale, near Oldbury-on-Severn, Gloucestershire, 1927. Plants were taken to Kew and two of the half-dozen seedlings raised bred true to the white flower colour. Still more specimens were seen in Gloucester in August 1929. The oldest trivial seems to be *leucantha* Kunze, published in 1842. E. Nelmes, in *Journ. Bot.*, 341, 1929.

194/19. Rosa tomentosa Sm., var. scabriuscula, nova forma Leesii Wolley-Dod. Menai Straits, near Bangor, Carnarvon. Named after Arnold Lees.

Var. foetida Bast., nova forma moretonensis Wolley-Dod. Moreton, Hoylake, Newton Heath, Woodchurch, Claughton, all in Cheshire. A. H. Wolley-Dod in *Journ. Bot.*, 41, 1929.

196/1. Crataegus monogyna Jacq., var. gracilis Druce. Leaf segments narrow. Hoveton, Norfolk. Miss Todd.

[197/6. Cotoneaster humifusa Duthie. Ex J. H. Veitch, *Hortus Veitchii*, 396, 1896. (China.]

220/10. Epilobium montanum L. At the Watersmeet and about Lynmouth, Devon, a form of this plant appeared in which the petals were more deeply notched. This gave the flowers, when they were nearly closed, the appearance of having eight petals. It was a rainy day so the flowers were not fully open. On spreading out the petals this was shown to be due to the deeper notch. Specimens are distributed through the Club [O. 83].—G. C. Druce.

239/4. × Eryngium Oliverianum Delarbre Eryng. 37, t. 12. Alien. Orient. Waste ground, Lyme Regis, Dorset, August 1929, as *campestre*, Sir M. Abbot Anderson. Mr J. Fraser confirms my name of *Oliverianum*.

274/1. Angelica sylvestris L., nov. var. (vel forma) purpurascens Druce. In the ditches about Braunton, N. Devon, September 1929. Differs from the type in its blackish-purple flowers and in the deeper colour of the stems. Pink-flowered forms are not rare, but this had them very dark purple. The upper leaflet is usually decurrent. G. C. Druce.

279/2. Coriandrum Tordylioides Boiss. Fl. Orient. ii., 921. Alien. Syria, Aleppo, in agris incultis. Burton-on-Trent, Staffs, July 1929. From the distance I thought it was the long sought for *Tordylium*, but a glance at the fruits dispelled the idea. Mr Fraser names it as above It is the first time it has been noticed in Britain, and has been brought in with "Turkish" barley.

282/1. Daucus Carota L., lusus m-umbellata Dr. Par Moor, Cornwall, L. T. Medlin, ex Thurston.

287/2. Sambucus nigra L., nov. var. ovali-fructu. Garth Wood, Cardiff, Prof. R. M'Lean. Differs from the type in the larger, oval berries.

326/1. Antennaria dioica (L.) Gaertn. A note on the value of it as a very useful low-growing adjunct to the Rock-garden appears in *Gard. Chron.*, 44, 1925. The form with deep rose-pink flowers, which we have called *roseus*, is wrongly designated as *hyperborea* DC., which differs from type *dioica*, not in the colour of the flowers but in the leaves being hairy on both sides. This was originally found in Skye.

345/4. Rudbeckia speciosa Wender. Britton & Brown Fl. iii., 472, t. 7. Black-eyed Susan. Alien, N. America. On Rere Hill, Hascombe Hill, Surrey, R. Grierson. Named at Kew.

347/14(2). Helianthus multiflorus L. Alien, N. America. Dagenham, Essex, 1928 [n. 279], R. Melville.

396/9. Cirsium palustre × pratense = × C. spurium Delastre. Rough field near Kings Nympton, N. Devon, September 1929, Miss Owen and Miss Maud Wilkinson. Last September there was forwarded to me a portion of a thistle gathered in the above locality by Miss Maud Wilkinson who thought it might be the Tuberous Thistle. At first I thought it might go under that plant, but, not being satisfied, I went down to Devon and there I was conducted by these ladies to the remote place on the moors (c. 1000 ft.), where it grew in very small quantity, only four plants being seen amid a host of the Meadow and Marsh Thistle. There seems no reason to doubt its being the above hybrid, and to this Mr C. E. Britton agrees. The plants are about three feet high and are branched from the base, the long branches bearing about three flower-heads. The phyllaries are neatly arranged, and these have a viscid-looking callosity below the terminal spines which must be due to the *palustris* parentage. As in *pratense* the lower leaves are but little cut, but the stem leaves are regularly cut but with a greater development of spines than in *pratensis*, and they are more spinous-decurrent. We may safely identify it as above, and the combination has received the name × *C. spurium* Delastre. Miss Owen and Miss Wilkinson are to be congratulated on making so good a record for N. Devon.—G. C. Druce.

405/16. Centaurea aspera Willd., var. auricularia DC. Burton-on-Trent, Staffs, G. C. Druce.

405/46. C. variegata Lamk. (C. Seusana Chaix). Alien, Medit. Burton-on-Trent, Staffs, G. C. Druce.

407/4. Carthamus tenuis (Boiss. et Blanch.) Bornmüller. Alien, Jerusalem, Lebanon. Stony fields, Burton-on-Trent, Staffs, came in with Turkish Barley, G. C. Druce.

419/22. Hieracium scoticum F. J. Hanbury, var. submaculatum Dahlstedt, nov. var. [Ref. Nos. 4241, 4286.] Differt a typo foliis subinde ± maculatis, cæterum tenuibus minus pilosis. Cæterum vix devians. Seems to be connected with the type through intermediate forms. Style yellow. Rare. Hoy, Orkney, 1929, H. H. Johnston in *Trans. Bot. Soc. Edin.*, 1929.

419/50(2). H. dasypodum Dahlstedt, nov. sp., under Zahn's H. pallidum Bivona-Bernhardi. *Caulis* humilis—sat elatus 0-folius, basi sparsim et longe pilosus, cæterum parce pilosus, apicem versus parce stellatus. *Folia* rosularia 4-5 subtus sæpe violascentia, exteriora ovalia obtusa minuta denticulata, interiora lata—anguste ovato—lanceolata dentibus acutis sparsis ad basin longioribus prædita longe acuta, supra subglabra—glabra, rutilus sparsim in nervo dorsali longe et dense pilosa petiolis densissime et longe lanuginoso—pilosa. *Inflorescentia* vulgo pauciflora laxa ramis acladium 10-20 mm. longum ± superantibus, sat dense floccosis glandulis et pilis mediocriter longis sparsim—densiuscule obtectis. *Involucrum* latiusculum basi ± ovata. *Squamae* exteriores sat angustae acutiusculae, interiores angustae ± acutae—obtusiusculae, pilis sat longis apice longe albidis ± densis et glandulis parum conspicuis parvis sparsis obtectae, in marginibus ± floccosae apice carnosae. *Ligulae* obscure luteae. This species seems to be allied to *Hieracium pycnodon* Dahlstedt, but differs from it through the more hairy leaves and petioles and less hairy darker heads. *Locality.*—Reference No. 4012, heathery rocky crags on hillside, 430 feet above sea-level, between Grut Fea and Glen of Button, Hoy, Orkney, July 12, 1928, H. H. Johnston, and J. Sinclair [Ref. No. 575]. Common. Plants in full flower. In the living plant, the leaves are dark green above, dark purplish-green or dark purple beneath; style with its two recoiled branches yellow. See *Trans. Bot. Soc. Edin.*, 1929.

419/69(2). H. pseudomicrodon Dahlstedt, nova sp. *Caulis* circa 2 cm. altus ima basi excepta glaber—subglaber a medio parce stellatus apice glandulis minutis sparsis obsitus, 1-3-foliatus. *Folia* sat læte viridia subtus, pallidiora, 2-3 approximata, anguste lanceolata acuta, superiora minus—minusque evoluta anguste lineari—lanceolata longe acuta, summum bracteiforme acutum, omnia parce et remote acute dentata, supra glabra—subglabra subtus præsertim in nervo parce et longe pilosa, inferiora in petiolo longe et sat dense pilosa in margine parce ciliata vel glabra. *Involucrum* mediocre sat angustum. *Squamae* exteriores ± lineares, reliquae anguste ± lineari—lanceolatae, omnes in apicem acutiusculum, protractae, sat crebre et sat longe pilosae, parce et minute glanduliferae, exteriores inferne in margine leviter stellatae. *Calathium* circa 25 mm. diametro. *Ligulae* amoene luteae, dentibus glabris. *Antherae* polline carentes. *Stylus* cum *stigmatibus* luteus. One of the *Oreadea*, under Zahn's *H. saxifragum*, nearly related to *H. microdon* Dahlstedt, from Iceland, but differs from it through more sparingly dentated leaves and more hairy heads. *Locality.*—Grassy,

rocky crags at burnside in a ravine, 280 feet above sea-level, south-west side of Berriedale Burn, below a waterfall, Hoy, Orkney, Scotland, (1) Ref. No. 3657 (plants in full flower), August 8, 1927, H. H. JOHNSTON; and (2) Ref. No. 604 (plants sparingly in flower), August 26, 1928, JAMES SINCLAIR. See *Trans. Bot. Soc. Edin.*, 1929.

419/110. H. SAGITTATUM (Lindeberg) Dahlstedt, sub-sp. SAGITTATUM Lindeberg, var. c. ABRASUM Dahlstedt, nov. var. A typo differt foliis angustioribus, squamis involucri angustioribus magis glandulosis et pilis obscurioribus sparsioribus vestitis, floccis in margine squamarum sparsis et solum ad basin evolutis. Forsitan species nova. *Locality.*—Reference No. 4007, heathery sandy banks at burnside, 50 feet above sea-level, Valley Burn, Hoy, Orkney, July 12, 1928, H. H. JOHNSTON; and JAMES SINCLAIR [Ref. No. 572.] Rare. Plants in full flower. In the living plant, the leaves are dark green above, paler green beneath; and the style is brownish yellow. See *Trans. Bot. Soc.*, *Edin.*, 1928.

419/111(2). H. PYCNODON Dahlstedt, var. b. ACUTIDENS Dahlstedt, nov. var., belongs to Zahn's capital or group-species H. SAGITTATUM (Lindeberg) Dahlstedt. A typo differt foliis magis anguste et acute dentatis squamis involucri margine apiceque minus floccosis. Differs only from the type through more acute and narrower toothed leaves and less floccose phyllaries. *Locality.*—Ref. Nos. 590 and 602, Ward Hill, Hoy, Orkney, July 31 and August 16, 1928, JAMES SINCLAIR. Rare. Plants in full flower, with yellow styles and stigmas.

419/171(3). H. SUBALPESTRIFRONS Dahlstedt, nov. sp., under Zahn's H. SUBRAMOSUM Lönnr. *Caulis* ± elongatus, 1-2-folius inferne sparsim pilosus, superne parce pilosus, apicem versus ± floccosus. *Folia* rosularia 2-3, exteriora ovalia minute dentata obtusa, intermedia et interna ± anguste—late ovato—lanceolata acuta magis conspicue dentata; *folium caulinum infimum* petiolatum anguste ovato—lanceolatum acutum sparsim et breve dentatum vel ad basin dentibus longioribus acutis præditum, *summum* anguste lanceolatum—fere lineare acutissimum fere integrum, omnia supra parce pilosa subtus in pagina sat dense in nervo dorsali dense pilosa, petiolis sat dense et sat longe pilosa. *Inflorescentia* paniculata contracta involucris summis sæpe bigeminis, petiolis pedicellisque brevibus brevissime acladium 0-10 mm. longum paullum superantibus. *Involucrum* parvum sat angustum basi ovata—turbinata. *Squamae* exteriores anguste ovato—triangularis brevis, interiores latiuscule linearis obtusae—rotundato-obtusae, pilis obscuris sat densis vestitae glandulis solitariis absitae, exteriores magis conspicue floccosae, interiores vix floccosae. *Lingulae* obscure luteae. This species differs from *Hieracium subalpestre* Lindeberg, to which it is very nearly related, through narrower less dentated leaves and contracted inflorescence with darker and less floccose heads. *Locality.*—(1) Ref. No. 565, grassy heathery sandy banks at burnside, 20 feet above sea-level, Burn of Quoys, Hoy, Orkney, July 6, 1928, JAMES SINCLAIR. Rare. Ref. Nos.

4037 and 4038, style brownish yellow, Southburn, Hoy, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.*, 1928.

419/239. H. INULOIDES Tausch, sub-sp. STRICTUM Fries, forma ANGUSTIFOLIA Dahlst. South Walls, Hoy, JAMES SINCLAIR, ex H. H. JOHNSTON in *Trans. Bot. Soc. Edin.*, May 1929.

423/17(2). TARAXACUM CALOPHYLLUM Dahlstedt, nov. sp. *Folia* obscure viridia supra sparsim maculata subtus pallidiora, multilobata lobis brevibus valde approximatis ± curvato—hamatis crebre et sat late dentatis, lobo terminali sagittato parvo—medioeri sæpius bidentato sat longe acuminato, lobulis lateralibus ± hamatis, petiolis pallidis nervo mediano leviter violascente. *Involucrum* breve latum obscure olivaceo—viride. *Squamae* exteriores in alabastro adpressae, deinde base adpressae—recurvae, sat longe ± ovato-lanceolatae—lanceolatae breve acuminatae ± marginatae, interiores lineares apice ± purpurascentes. *Calathium* circa 25-30 mm. diametro. *Ligulae* luteae, marginales extus stria obscure canopurpurea notatae. *Antherae* polliniferae. *Stylus* et *stigmata* lutei. *Achenium* ignotum. Fruit unknown. Judging from the spotted leaves it can very possibly belong to Spectabilia. *Locality.* —Ref. No. 4211, grassy, shell-sandy banks at seashore, 10 feet above sea-level. Bu, Bay of Creekland, Hoy, Orkney, Scotland, May 13, 1929. Rare. H. H. JOHNSTON. In the living plant, according to my observations, the leaves are dark green and not spotted above ("supra sparsim maculata" according to Dr Hugo Dahlstedt's description made from the dried plants), paler green beneath, with a purplish-green midrib. Outer phyllaries adpressed in flower-bud, recurved in flower; inner phyllaries adpressed, simple (not gibbous or appendaged) at the dark purple apex. Corolla yellow, striped dull purplish-green beneath in the outer florets. Style and its two recurved branches yellow.

423/42(3). T. ARANEOSUM Dahlst. Ivinghoe, Bucks, G. C. DRUCE.

423/46(3). T. CALOCHISTUM Dahlst. Husinish, Harris, G. C. DRUCE. "Allied to this," DAHLSTEDT.

423/47(2). T. CONNEXUM Dahlst., nova sp. A *T. subsagittipatente*, cui est sat similis, haec species, foliis laete viridibus, lobis dentatis majis patentibus acutioribis et saepe longioribus, petialis latioribus minus conspicue coloratis, involucris majoribus squamis exterioribus angustioribus majis recurvatis, calathiis c. 45-50 mm. in diametro, radicautibus nec non stylis et stigmatibus fusco-virescentibus, satis est diversa.

This species is in a certain degree intermediate between *T. subsagittipatens* and *T. sagittipatens*. It resembles the former in the faintly coloured petioles, and the often more or less recurved lobes of the outer leaves, and the latter in the pale coloured leaves, the greater heads, the longer outer phyllaries, and the longer marginal flowers. By the Banbury Road, near Steeple Aston, Oxon, G. C. DRUCE.

423/54(3). T. EXIMIUM Dahlst. High Force, Durham, 1928, G. C. DRUCE. "A modification," DAHLSTEDT.

423/65(2). T. LACERABILE Dahlst., nova sp. *Folia* laete viridia, angusta, elongata lineari-lanceolata, lobis plurimis, basi lata, dorso convexo, ± dentato-laciniato, in apicem longum angustum acutum-obtusiusculum protractes, lobo terminali parvo sagittato, lobulo apicali angusto, saepe protracto lingulato-obtuso, petiolis et nervo mediano pallidis. *Scapi* vulgo quam folia breviores. *Involucrum* mediocre crassiusculum subobscurum. *Squamae* exteriores lanceolatae, erecto-patentes, subadpressae, densum ± recurvatae. *Calathium* c. 45 mm. diametro. *Ligulae* sat laete luteae, marginales extus stria cano-violaceae notatae. *Antherae* polliniferae. *Stylus* et *stigmata* fusco-virescentes. *Achenium* olivacea-stramineum, apice acute spinulosum, caeterum ± tuberculatum, 3 mm. longum, 1 mm. latum, pyramide conico cylindrica, 1 mm. longa, rostro c. 9 mm. longo.

The species is allied to *T. stenoglossum* Dahlst., but it differs in its long and narrow leaves with more irregular and more laciniated lobes, and in the small end lobes with narrow tongue-like terminal lobe. Wheatley-turn, near Oxford, May 1929, G. C. DRUCE.

423/75(2). T. OBLONGATUM Dahlst., nova sp. *Folia* subobscure viridia, ± oblongi-spathulata, lobis ± approximatis, brevibus, saepe ± hamate acutis, lobo terminali (in foliis extimis excepto) ± ovato-sagittato, integro obtuso-obtusiusculo v. acutiusculo, marginibus ± saepe valde convexis, in foliis intimis majis dentato, petiolis ± violascentibus. *Involucrum* parvum atroviride. *Squamae* exteriores ± lanceolatae, recurvatae, ± obscure purpureo-violascentes, acutae. *Calathium* parvum, c. 45 mm. diametro. *Ligulae* obscure luteae, marginales extus stria rubropurpureo notatae. *Antherae* polliniferae. *Stylus* et *stigmata* ± fusco-virescentes.

Distinguished by its spathulate or obovate-lanceolate leaves, with very well developed ovate-sagittate, mostly blunt, end lobes, and small dark heads with recurved, very acute, lanceolate and purplish coloured outer phyllaries. Railway near Notley Abbey, Bucks; Marcham, Berks, G. C. DRUCE.

423/75(3). T. OBSCURATUM Dahlst., nova sp. *Folia* obscure (subprasisio) viridia, lanceolata—oblongo-lanceolata, lobis approximatis latis deltoideis, summis interdum subhamatis, subintegris, reliquis dorso crebre et acute dentatis, lobo terminali ± lato, ± sagittato, mediocri, sat magno marginibus convexis et lobis praeimis parum determinato, subintegro, parum denticulato, dentato breve acuto, petiolis et inferiore v. maxima parte nervo mediano ± violascentes. *Scapi* plures foliis superantes. *Involucrum* mediocre, breve, obscure atrovirescens, basi ± ovato. *Squamae* exteriores breves, ovato-lanceolatae, late lanceolatae, ± adpressae v. late adpressae, atrovirescentes. *Calathium* parvum, c. 40-45 mm. diametro. *Ligulae* obscure luteae, marginales extus stria rubro-violacea notatae. *Antherae* replete polliniferae. *Stylus* et *stigmata* leviter fusco-virescentes. *Achenium* 3.5 mm. longum, 1 mm. latum, apice breve spinulosum, externum valde squamulosi-tuberculatum, pyramide cylindrica 0.5 mm. longo, rostro 9 mm. longo.

This species is easily distinguished by its dull green (and as it seems a little leek green) leaves, with broad, very densely dentated lobes and broad end lobes, short heads with adpressed, broad, lanceolate or lanceolate-ovate outer phyllaries, and dark yellow flower heads. Seems not to be related to Scandinavian forms. By the Banbury Road, Steeple Aston, Oxon. G. C. DRUCE.

423/77(2). T. PECTINATIFORME Lindb. f. Under wall, Westbury-on-Trym, W. Gloster [333], May 5, 1927, Miss I. M. ROPER. Occurs in Sweden, etc.

423/78(2). T. PERHAMATUM Dahlst., nova sp. *Folia* laete viridia, anguste lineari-lanceolata, multilobata, lobis brevibus, ± hamatis, ± approximatis, acutis, subintegris v. inferioribus ± denticulatis, lobi terminali brevi et lato ovato-sagittato integro, marginibus convexis, folia interiora majis oblongo-lanceolata, lobis ± denticulatis, lobo terminali magno, lato subintegro—integro, marginibus nervi convexis, breve acuto—obtusato, petiolis et nervo dorsali ± violascentibus. *Involucrum* parvum, mediocre, obscurum basi ovato. *Squamae* exteriores ± lanceolatae retroversae, ± violascentes. *Calathium* parvum, c. 70 mm. diametro. *Ligulae* sat obscure luteae, marginales extus stria cano-purpurea notatae. *Antherae* polliniferae. *Stylus* et *stigmata* fusco-virescentes. *Achenium* fusco-stramineum, c. 1.5 mm. longum, vix 1 mm. latum, pyramide brevi conica, superne acuti spinulosum, inferne ± laeve, rostro c. 9 mm. longo.

This species is distinguished by its narrow, pale-coloured leaves with short hamate lobes and broad end lobes (short and small in the outer, and large and broad in the inner leaves), faintly coloured petioles and middle nerves, and dark, small heads with purple-violet outer phyllaries. The outer leaves have small and broad end lobes with highly convex margins, the inner have large, very blunt end lobes, all with short and acute lateral lobes. Seems to be a little related to *T. subsagittipatens*. Boar's Hill, Shefford Woodlands, Berks; Elsfield Lane, Kingsey, Oxon; railway near Notley Abbey, Bucks, G. C. DRUCE.

423/81(2). T. PRAEVNUM Dahlst. Hayle, Lizard Downs, Cornwall; Cronkley Fell, N.W. Yorks (nearest to this species). G. C. DRUCE.

423/87(2). T. SUBLATISSIMUM Dahlst., nova sp. *Folia* sat laete viridia, anguste lanceolata—anguste obovato-lanceolata, lobis ± deltoideis, subhamatis, distantibus, subintegris v. inferioribus sparsim denticulatis, ± acutis, interlobiis ± denticulatis, saepius latis v. margine ± purpurascentibus, lobo terminali ± sagittato, latiusculo, lobulis laceralibus, ± reversis, marginibus subererecti leviter convexis, integro—subintegro breve acuto, folia interiora lobi terminali latiore marginibus majis convexis, petiolis et nervo mediano leviter coloratis. *Scapi* plures folia ± superantes. *Involucrum* ± atrovirescens, mediocre. *Squamae* exteriores ± retroversae, ± lanceolatae, supra ± obscure livido-virides. *Calathium* mediocre, 40-75 mm. diametro. *Ligulae* obscure luteae, marginales extus stria ± obscure violacea notatae. *Antherae* polliniferae. *Stylus* et *stigmata* ± fusco-virescentes. *Achenium* maturum ignotum.

Distinguished by its very pale green (a little greyish-green) leaves. with distant, deltoid, acute lobes, ± purplish coloured interlobes, sagittate end lobes and very dark green heads, with, on the upper side, lighter green recurved outer phyllaries. Reminds one of *T. latissimum* Palmgr., and seems to be allied to it. Little Bedwyn, N. Wilts; Pershore, Worcester; Ham, Northants, 1929; also a form of it from Tubney Wood. Berks, DRUCE.

423/88(2). T. SUBPALLESCENS Dahlst., nova sp. *Folia* laete viridia, anguste elongata, lineari-lanceolata, lobis brevibus deltoideis—triangularibus, angustis, patentibus, recurvatis, ± distantibus dentatis v. inferioribus leviter dentatis, lobo terminali parvo hastato-sagittato (triangulari), lobulis lateralibus brevibus mediocribus, ± patentibus v. subretroversis, lobulo apicali saepius ± lingulato brevi, folia interiora latiora ± oblongo-lanceolata, lobis longioribus majis dentatis, lobo terminali magno latius-angustius ovato sagittato—ovato-hastato, integro, marginibus ± convexis, lobulis lateralibus brevibus, ± retroversis, patentibus. petiolis pallidis. *Involucrum* sat breve basi rotundata. *Squamae* exteriores ± lanceolatae et ± retroflexae, atrovirescentes. *Calathium* 45-50 mm. diametro. *Ligulae* sat obscure luteae, marginales extus stria cano-violacea notatae. *Antherae* polliniferae. *Stylus* et *stigmata* fusco-virescentes. *Achenium* superne acute et sat longe spinulosum, caeterum laeve v. leviter tuberculatum, c. 3 mm. longum, 1 mm. latum, pyramide cylindrica 0.5 mm. longa, rostro c. 9 mm. longo.

This species seems to be very closely allied to *T. pallescens* Dahlst. from Scandinavia. It differs from it in its narrow, more distant and more acute lobes, in the darker green colour of the leaves, and the darker and larger heads with longer outer phyllaries. Shefford Woodlands, Tubney Wood, Berks, 1924; Byfleet, Surrey, 1929; Evesham, Upton-on-Severn, Worcester, 1929. Also, differing a little from type, Elsfield Lane, Oxon; Ivinghoe, Bucks, and a new form allied to this, Bledlow Ridge, Bucks, G. C. DRUCE.

423/88(3). T. SUBSAGITTIPATENS Dahlst., nova sp. *Folia* subobscure viridia, ± anguste oblongo-lanceolata, multilobata, lobis deltoideis ± recurvatis, sursum magnitudine accrescentibus, apicibus ± recurvis, dorso ± convexo, superioribus in margine integris, inferioribus ± denticulatis—dentatis, majis patentibus, infimis parvis, lobo terminali ± sagittato, mediocri integro, marginibus rectis v. medio convexis, apice saepius ± protracto, obtusiusculo v. subacuto, folia interiora latiora, lobis saepe longioribus, dorso dense et acuto denticulatis-dentatis, lobo terminali magno ovato-sagittato, lobis lateralibus recurvis, acutis, mar-

ginibus convexis subintegris v. inferne ± denticulatis v. basi in uno exteriore latere dente majore instructo, petiolis angustis et nervo mediano ± roseo-violaceis. *Involucrum* atroviride mediocri, basi ± ovata. *Squamae* exteriores erecto-patentes v. ± recurvae, late lanceolatae—ovato-lanceolatae, obscure purpureo-violaceae. *Calathium* parvum, 35-40 mm. diametro. *Ligulae* sat obscure luteae, marginales extus stria purpureo-violacea notatae. *Antherae* polliniferae. *Stylus* et *stigmata* lutea. *Achenium* ignotum.

This form resembles in general appearance *T. sagittipatens* Dahlst. from Sweden, but differs from it by its coloured petioles and middle nerves, darker green leaves, small dark heads with purplish-violet outer phyllaries and small flower heads. On the old walls of the Roman Villa. North Leigh, Oxon, 1927, G. C. Druce.

446/2. Erica Tetrálix L., var. Mr R. Kempthorne sends from the Lizard a curious form of this species. It is characterised by the short corolla, half the length of the stigma, the white corolla being four lobed, semi-reflexed and downy, and it has no stamens. As will be seen it combines the characters of var. *alba*, var. *fissa* Dr. and var. *anandra* Rich.

446/7. E. vagans L., forma or var. parviflora. Corolla minute, spreading rather than campanulate, more deeply cut with more acute segments. The Lizard, Cornwall, R. Kempthorne.

471/1. Fraxinus excelsior L. Messrs Franklin and Jones (Oxford) state that at their timber auction on Tusmore Estate, Oxon, they sold one of the very few King Ash trees left in this country. It was about 300 years old. The tree had an unbroken height of 55 feet and the quarter girth at 5 feet high was 28½ inches. The trunk appeared to keep this measurement practically to its full height. The contents were estimated to be 260 cubic feet. Mr C. R. Claridge (Exeter) purchased the tree for £65, representing 5s a cubic foot, a more or less unheard of price to-day.

472/3. Ligustrum sinense Loureiro. Alien, China. On the edge of a beech clump, near Crab Wood, Hampshire, Rt. Hon. H. Trevor Baker. Named by J. Fraser. The pale green, oval leaves, and small black fruits characterise it. It is the handsomest of the deciduous or semi-evergreen privets on account of the profusion of its bloom. It grows from twelve to twenty feet high, with widely spreading branches and a rounded or flat top.

506/1. Myosotis serotina Hülphers. Bladon Wood, Oxon, G. C. Druce. See paper by A. E. Wade in this *Report*.

509/7. Echium calycinum Viv. Alien. Inner Farne Isles, Northumberland, ex Miss Lucy Richards, teste J. Fraser.

513/1. Convolvulus arvensis L., forma picta. Mr J. F. Botterill sends a form which grows on the banks of the disused canal near Aston Clinton, Bucks. The pale pink corolla is rather small, but at the base of each segment there is a deep purplish-red, well-defined oblong mark. All the flowers were marked alike, and plants were noted in three different places.

Var. integrata Druce. Mr B. Reynolds sends from Mortlake, Surrey, a plant with un-auricled leaves, the blades large, 4.5 cm. × 3 cm. in their largest state, corolla deeply rose-red and white = var. *integrata* Druce. It is near to *obtusifolia* Choisy.—G. C. Druce.

515/10. Cuscuta breviflora Visiani. Alien, Central America and S. and E. Europe, on various plants. Allied to *C. obtusiflora* H. B K. This occurred on sugar-beet in a garden in Birmingham. The corymbs of flowers are in loose branched panicles, with shortly stalked flowers. Corolla finely papillose, reflexed after a time; styles two, stigma capitate; calyx as long as corolla tube. Named by J. Fraser.

517/18. Solanum acaule Bitter, var. subinterruptum Bitter, subvar. caulescens Bitter in Fedde Rep. xi., 391-4, 1912; xii., 453, 1913. Alien, ? S. America. Selkirk, 1916, Miss I. M. Hayward. After some years, Dr S. Polgar, through the kindness of Dr Probst, has at last identified the Selkirk *Solanum* as belonging to the above.

527/19. Verbascum longifolium DC., non Tenore. Reduced by Thellung to *V. speciosum* Schrad. Herts. J. E. Little. J. Fraser, however, inclines to name it *V. Phlomoides*.

543/8. Veronica anagallis-aquatica L. × V. aquatica Bernh. Tringford Reservoir, Herts, growing with both putative species. Leaves intermediate in shape, 2.1 cm. × .8 cm. The flowers inclined to the blue of *Anagallis*, but were a little smaller and had a distinct tinge of red in them. Plants entirely barren, I. A. Williams in *Journ. Bot.*, 24, 1929.

543/11. V. serpyllifolia L., var. obscura Drabble & Salmon in Journ. Bot., 213, 1929. Freshwater, Isle of Wight; Tarbert, N. Harris, Druce. "Herba prostrata, ramis longissimis profuse radicantibus, foliis late ovalis pagine opacis."

543/23(3). V. grandis Fisch. ex Spreng. Neue Antdeck ii., 122, Alien, Europe (det Rompp.). Near Ambleside. 1866. R. Tucker.

545. Euphrasia. Mr H. W. Pugsley read a paper on May 2, 1929, at the Linnean Society on "A Revision of the British Euphrasias." In *Journ. Bot.*, 224, 1929, he gives abridged diagnoses of the new species.

E. rotundifolia nov. sp. = E. latifolia auct. ang. (ex parte) non aliorum. Melvich, Sutherland, Marshall, Ref. No. 1850, partim.

E. Marshallii nov. sp. = E. latifolia auct. ang. (ex parte) non aliorum. West Sutherland, Caithness, Orkney, MARSHALL, Ref. Nos. 1845, 1850, partim.

E. CAMBRICA nov. sp. Mountains of North Wales, PUGSLEY.

E. PSEUDO-KERNERI nov. sp. = E. KERNERI auct. ang. non Wettstein. Chalk Hills, South of England, PUGSLEY, Ref. No. 447; Reigate Hill, Surrey, C. E. SALMON in *Hb. Brit. Mus.*

E. RIVULARIS nov. sp. Mountains of North Wales, PUGSLEY, Ref. No. 438.

E. ANGLICA nov. sp. = E. ROSTKOVIANA auct. ang. pro maj. parte, non Hayne nec Wettstein. South of Yorkshire, Wales, Ireland. PUGSLEY, Ref. No. 440. MARSHALL, Ref. No. 1826.

545/2. E. BOREALIS Wettstein, var. c. ATROPURPUREA Pearsall, nov. var. Planta compacta, robusta, ramosissima, 5-8 cm. alta. Spica internodiis brevissimis itaque caulis et rami foliis bracteisque celati sunt. Bracteae late ovatae, obtusae, dentibus obtusis. Corolla media omnino atropurpurea. Ref. No. 334. These are stout, compact, much branched plants, often about 6 cm. in height. The leaves have a terminal lobe often broader than long, very obtuse and usually with about 3 obtuse teeth on either side. Bracts broadly ovate, not cuneate-based, and usually with about 4 obtuse teeth on either side. Only the uppermost bracts possess acute teeth. Spikes very congested, with imbricate bracts. All foliage very setose on margins and nerves only. All leaves and bracts wide-based, except the lowermost leaves. Flowers numerous, well-formed, medium-sized and of very striking appearance. They are wholly dark purple with darker rich purple lines on both lips. The capsules are those of typical *Euphrasia borealis* Wettstein, but the distinctive habit and flowers make it quite worthy of varietal status. W. H. PEARSALL. *Locality.*—Ref. No. 334, natural, grassy, sandy pasture at sea-shore, alt. 15 feet, at the mouth of Green Burn, Sand of Sand, Fetlar, Shetland, July 23, 1929, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.*, 334, 1929. This beautiful dark purple-flowered form was seen by me plentifully in Unst, and also locally on the Mainland.—G. C. DRUCE.

546/4. BARTSIA VISCOSA L., nov. var. BREVIFLORA. Sent by Mrs G. YOUNG, from Buncrana, Donegal. In this plant the calyx is as long or longer than the corolla. In other ways it is normal. G. C. DRUCE.

548/3. RHINANTHUS CRISTA-GALLI L., sub-sp. ELATIOR Soó, var. RAMOSISSIMUS Schur (fide C. E. Salmon). Ref. No. 140. Moist, natural grassy pasture, alt. 45 feet, West Burn of Houbie, Fetlar, Shetland, July 28, 1929, H. H. JOHNSTON. Native. Common. Plants in flower and unripe fruit. Corolla yellow, except the two lateral lobes of the upper lip, which are purple, very blunt, and shorter than broad.

549. MELAMPYRUM. Mr C. E. SALMON in *Journ. Bot.*, 105, 1929, gives the results of the examination of his specimens of *Melampyrum* by Dr Ralph Soó, who has recently written a monograph in *Fedde Rep.* xxiii., 895-957, and xxiv., 47-113, 1926-7.

M. ARVENSE L., sub-sp. PSEUDOBARBATUM (Schur) Wettst. Isle of Wight, v.-c. 10, C. E. S.

M. CRISTATUM L., sub-sp. RONNIGERI Pöverl. Walden. Essex, v.-c. 19, GIBSON; Elmswell, W. Suffolk, v.-c. 26, POWELL; Hardwick Wood, Cambridge, v.-c. 29, ad typum vergens; Monk's Wood, Hunts, v.-c. 31, *Hb. Power*.

M. SYLVATICUM L., sub-sp. SUBULVATICUM Schinz & Ronn. Ribblehead, Yorkshire, v.-c. 64, BEANLAND; Teesdale, Durham, v.-c. 66, MENNELL. This is probably our common British plant.

M. PRATENSE L., sub-sp. OLIGOCLADUM (Beauv.) Soó. Unwell Wood, Berks, v.-c. 22 (proxime *platyphyllum* Beauv.); Mallaranny, Co. Mayo, MARSHALL (sub-sp. *hians* Druce, f. *britannicum* Beauv.).

Sub-sp. PURPUREUM Soó, f. SCOTIANUM (Beauv.) Soó. Schiehallion, HAGGART; Sow of Athol, C. E. S., M. Perth, v.-c. 88; Carn Liath, Westerness, v.-c. 97, [4261], MARSHALL. A change of grades rather than new forms.

Sub-sp. HIANS (Druce) Beauv. Kincraig, Easterness, v.-c. 96, 1891, SOMERVILLE, previously seen by me; Vale of Avoca, Wicklow, 1835, J. W. CURTIS.

Forma PLATYPHYLLUM Beauv. Porlock Weir, S. Somerset, v.-c. 5, 1898, C. E. S.

Forma BRITANNICUM Beauv. Winch Bridge, N.W. Yorkshire, v.-c. 65, 1911, C. E. S.

The raising of the grade from vars. to sub-species by Beauverd, with the various varieties, will be seen in *Rep. B.E.C.*, 66, 1917, in my review of Beauverd's Monograph, as well as other varieties of *M. pratense* One remembers with a smile the verdict of the then Editor of the *Journal of Botany*—" There was nothing in *hians* worth notice," and the curt refusal to print it. This led to its being originally published in the *Naturalist*.

As long ago as *Rep. B.E.C.*, 186, 1887, I recorded *hians* from Logie, Nairn; Wigtown; Northumberland; Cumberland and Westmorland; and from Elgin; Salop; Easterness in the *Naturalist*, 226, 1888.

558/12. MENTHA RUBRA × VERTICILLATA Fraser. Talgarth, Radnor, DRUCE; Fyvie, N. Aberdeen, Rev. F. TURREFF. Det. J. FRASER.

561/11. THYMUS BRITANNICUS × CHAMAEDRYS (GLABER) = T. LANSDOWNEIAE Druce. " Liegende Stengel zum Teil mit Blattbuscheln, zum Teil mit Bluten standen abschliessand Bluhende." Aste ea 5 cm. lang, bis oben exakt goniotrich, Haare serr kurz und retrors, Blatter Klein, schmal elliptisch, von diiemer Consistenz, beiderseits sparlich behaart, am Raude von der Basis bis zur Mitte oder daruber geuvinpert Seiten Nerven nicht vortretend, Kelsh ± 7 mm. ringsum zottig, ob Kelshzahue kurz dreieskig. Of the prostrate shoots, some end with whorls of leaves, others terminate in inflorescences; the flowering branches are about 5 cm. long, exactly goniotrichous to the top, the hairs are very short and retrose. Leaves small, narrow, elliptic, of thin texture, sparsely hairy on both surfaces, margin ciliate for half or more of its extent; lateral nerves not prominent. Calyx ± 7 mm., villous all round; upper calyx teeth short triangular. At Dr Ronniger's suggestion I apply a name to it as Thymus Lansdowneiae, as I found it in July last with the Marchioness of Lansdowne, on the down Blackland, above Bowood, Wilts, and also later on in the month at Selsea Common, Gloucestershire, G. C. Druce.

572/4. Scutellaria Columnae Tenore. Halac. Fl. Graec. ii., 493. Archangeli, 438. Tab. in Sweet Gard., n. 52. Stem erect, simple or slightly branched, the lower part shortly hairy, the upper part, bracts and calyces villous-glandular, the stalks hairy; leaves pubescent, truncate or subcordate, ovate or oblong-ovate, largely and coarsely crenate. Raceme loose, elongate, bracts slightly stalked, ovate, acute, entire. Corolla arcuate (20-28 mm.), bluish-purple, with white tube, glandular-pubescent. Nuts granulate, with stellate hairs. In June 1929, the Rt. Hon. H. Trevor Baker sent me a plant which he had found in a wooded glen near Mells, Somerset. He said there were three or four plants growing among herbage near a pathway. There were no houses within 300 yards, and the nearest were only described as ruined cottages, about which the plant could not be seen. He took me from Bowood to see it, and I found it as he described. The track runs along the base of a wooded valley. However, in looking up the side, about 300 or 400 feet above the track, in quite a wild place without adventives, there was a large patch, 50 yards or more across, of the same species. The plant is mainly found in South Italy and Greece, extending also to Macedonia, Serbia, Hungary, Slavonia, and Banatia. It has also become naturalised in the neighbourhood of Paris.

596/2. Amarantus hybridus L., cf. var. patulus (Bertol.) Thellung. Dagenham, Essex [2830], R. Melville.

600/8. Chenopodium album L., var. diversifolium Aellen. Avonmouth, W. Gloster, C. Sandwith, teste Aellen.

Var. multospicatum Aellen. Avonmouth, W. Gloster, C. Sandwith; Didcot, Berks, G. C. Druce, teste Aellen.

Var. minuto-spicatum Aellen. Avonmouth, W. Gloster [10], C. Sandwith and J. Gibbons.

600/8. C. album × ficifolium = C. Zahnii Murr. Skipwith, N Yorks, August 1929, G. C. Druce.

600/8g. C. suecicum Murr = C. pseudopulifolium (Scholz) Murr in Hayward and Druce Adv. Fl. Tweedside, 190, 1919. Jericho allotments, Oxford, 1893; Selkirk, 1913, G. C. Druce, teste Aellen.

600/11. C. leptophyllum (Nutt.) Britton & Brown. Hovingham, N. Yorks, August 1929, G. C. Druce, teste Aellen.

Var. c. LEPTOPHYLLOIDES (Murr) Thell. Near Brighton, Sussex; Port Talbot, Glamorgan; Rye House, Essex; Par, Cornwall; St Cyrus, Kincardine, G. C. DRUCE, teste AELLEN.

600. C. ZOBELII Ludv. et Aellen. Galashiels, Selkirk, G. C. DRUCE and Miss I. M. HAYWARD, teste AELLEN.

600. C. PROBSTII Aellen. St Philips, Bristol, 1916, as *Berlanderi* × *album*, G. C. DRUCE, teste AELLEN.

600/20. C. STRIATUM (Krasan) Murr. Dr Probst writes me (24/3/29) that he has found that *C. strictum* of Roth Nov. Pl. Sp., 180, 1821, precedes *striatum* as the correct name. Roth's original plant is at Berlin.

600/21. C. HIRCINUM Schrad., sub-sp. MILLIANUM Aellen, var. QUINOA (Willd.) Aellen. Galashiels, Selkirk, Miss I. M. HAYWARD, as *C. paniculatum* in *Adv. Fl. Tweedside*, 193, 1919.

600/31(2). C. GIGANTEUM Don Prod. Fl. Nepal., 75, 1825. Coste and Reynier, 1907. Aellen in Fedde Rep. Spec. Nov., xxvii., 201, 1929, and Ber. Schweiz Bot. Gesell., xxxviii., 1929. Sabinal, Weston, Somerset, T. H. GREEN in *Herb. Druce*; Galafoot, Scotland, 1926, Miss I. M. HAYWARD.

615/11. POLYGONUM MINUS × PERSICARIA = P. BRAUNEANUM Schultz. Binsey Common, Oxon, with both parents, September 1929, G. C. DRUCE, teste Dr DANSER.

615/19. P. PATULUM M. Bieb., sub-sp. KITAIBELIANUM Danser. Boston, Lincs, July 1928, G. C. DRUCE, teste Dr DANSER.

618/4. RUMEX ELONGATUS Gussone. Have we this in Britain? This was first brought to the notice of British botanists by Dr H. TRIMEN in *Journ. Bot.*, 237, 1873. He had not seen type specimens, but the Thames plants between Putney and Hammersmith Bridge agreed, he thought, with the description in Gussone's *Plantae Rariores*. The leaves were not crisped, perfectly flat, 8-12 in. long, 1 in. wide, and much attenuated at the base into a long petiole. Subsequently the Rev. A. LEY recorded it from the Wye-side near Chepstow. Recently I sent to Dr Danser, in Java, my Tintern specimen, 1900, which the Rev. A. Ley passed as *elongatus*, but Dr Danser says it is only a form of *crispus*. To this species he also refers the *elongatus* [2199] of Mr C. E. Britton, from between Hammersmith Bridge and Putney, June 1920. Mr Britton says his specimens are quite identical with those gathered by Dr Trimen. Dr Danser says "Forms like this also grow in Holland, on the banks of rivers." Are these the *planifolius* Schur? G. C. DRUCE.

618/9. R. CONGLOMERATUS × MARITIMUS = R. LIMOSUS Thuill. Skipwith Common, Yorks, August 1929, G. C. DRUCE, teste Dr DANSER. Practically new to Britain. Another hybrid of the same parents, *R. Knafii* Celak., is on record. Our own *palustris* Smith is a species, and was confused with *limosus*.

618/13. R. MARITIMUS × PALUSTRIS = × R. HENRARDII Danser. Boarstall, Bucks, September 1929, G. C. DRUCE, teste Dr DANSER. A new hybrid to Britain.

628/10. E. ESULA L. Extract of p.c. from Dr Thellung, September 14, 1919:—*E. Esula* L.—Foliorum margo subtilis et tenuis, subrevolutus, apicem versus denticulatus. Folia semper ± oblanceolato=subspathulata, apicem versus latiora. *E. virgata* W. & K.—Foliorum margo anguste hyalinus rigidus, planus, subintegerrimus. Folia, quoad forma, variabilia, saepius a medio ad apicem longe attenuata, rarius. (f. *esulifolia* Thell.)—Supra medium latiora et inde eis *E. Esulae* valde similia.

637/1. URTICA DIOICA L., var. f. INCISA Dr. in Rep. B.E.C., 307, 1921. *The Chemical Nature of the Poison of Stinging Nettles.*—The fact that, for a single experiment, it has been necessary to isolate the urticating hairs from 100 kilos of fresh nettles to obtain 40 grms. of material, and that 100 of these hairs weigh about 1 milligramme, gives an idea of the amount of labour and patience the investigations briefly summarised have required. The urticating hairs of *Urtica dioica* have a protoplasm with an alkaline reaction which encloses an acid cell sap, in which a small amount of formic acid is accompanied by acetic, butyric, and other volatile fatty acids. It also contains the real poison. This is a non-volatile unsaturated acid substance containing no nitrogen. It is allied to the resin acids. Nettle poison is, therefore, neither formic acid, nor an enzyme, nor a toxalbumin. It is undoubtedly allied to the irritant substance of the Primulaceæ and of *Rhus Toxicodendron*. Less than 0.0001 milligramme of nettle poison will react on the human skin. Probably the irritant substance of some members of the N.O. Loasaceæ also belongs to the same chemical and pharmacological group.—F. Flury in *Zeits. Exper. Med.*, 1927, 1, 56.

644/1. CARPINUS BETULUS L., var. INCISA Aiton. Found originally by Aiton (*Hort. Kew*, iii., 263, 1789). This year it was found near Leatherhead as a tree about 50 feet high, " probably planted there some years ago." The Norwegian Maple, too, is in the vicinity. H. J. BURKILL in *Lond. Nat.*, 61, 1928.

650/15. SALIX LANATA × LAPPONUM. This is discussed in *Gard. Chron.*, 107, 189, 208, 231, 1928. Mr Chittenden says he had it from the garden of Dr Stuart of Chirnside and it was distributed under the hortal name of var. *Stuartii*. Mr Fraser identifies it as a hybrid, *lanata × lapponum*, included with a query in our *List*. There seems no reason to question Mr Fraser's determination, therefore we should write

S. lanata × *lapponum* = × *Stuartii* (Hort.) nov. hybrid. This is not identical with *Salix Stuartiana*, which was named by Smith after an earlier Dr John Stuart who sent, from his garden at Luss, specimens to Smith. Moss reduced the Luss plant to type *lapponum* (of which it seems only a form) in the *Cambridge Flora*.

658/1. HYDRILLA VERTICILLATA (L. f.) Presl, var. POMERANICA (Reichb.) Dr. Mr F. W. Branson tells me that he feels quite certain that a specimen flowered under the following conditions in his garden near Leeds. Inside a metal box about 5 × 2½ and 1 inch deep some specimens were planted with mud, and one plant flowered and showed evidence of fruiting, due, he thinks, to the fact that they were in a warm corner of his garden, no lid being on the box. Showers prevented the mud from drying.

669/8. ORCHIS PRAETERMISSA Druce, forma VIRIDESCENS. Sent by Mr ERIC TAVERNER, June 1929, from between Glyndyfrdwy and Berwyn, Denbigh. Spike very dense, inflorescence short, bracts very long, twice the length of the greenish-purple flowers.

Forma BRACTEATA Druce. A plant sent from near Holsworthy, N. Devon, 2 feet high, strongly bracteate (up to 1¼ inch).

669/17. O. PYRAMIDALIS (ANACAMPTIS) × HABENARIA GYMNADENIA. Near Easington, Durham, in a mixed colony of the two parents, J. W. HESLOP-HARRISON in *Vasculum*, 158, 1928.

674/4. Hybrid Orchids. A further note on the hybrids between HABENARIA VIRIDIS and ORCHIS. In a note published in the 1928 *Report*, I gave my reasons for supposing that only one or possibly two hybrids between *Orchis* and *H. viridis* should be admitted to the British List. (1) The plant for which I then proposed the name × *O. Ullmanii*, and possibly (2) the hybrid *O. Fuchsii* Druce and *H. viridis* L. I also gave reasons for supposing that the plant figured in plate 15, *Supplement to B.E.C. Report* for 1917, which had been identified by the Winchester botanists as *O. Fuchsii* Druce × *H. viridis* L., was in reality *O. Fuchsii* Druce × *Habenaria conopsea* (L.) Br. I am indebted to Mr Carry Gilson for pointing out to me that I overlooked one important point in Mr McKechnie's original description of this plant. The presence of a yellow spot on each side of the labellum indicates *H. viridis* rather than *Habenaria*. In view of this and the fact that several botanists who had the advantage of examining the living plant were unanimous in their diagnosis, the second hybrid, *O. Fuchsii* Druce × *H. viridis* L., may, I think safely be included in the List. P. M. HALL.

678/6. CROCUS ZONATUS J. Gay. Alien, Asia Minor. Mr F. CLARKE kindly tells me that he found "8 specimens in a wild state, not near houses or gardens, among grass, on the edge of a wood at Shackleford, Surrey, in last October. There were also two more in the vicinity but some little distance from the others." Named at Kew. Do we owe this to a disciple of Maurice Hewlett? The Crocus is one of those sold by the Dutch bulb-growers, at about 6d each. In "The Genus Crocus," Maw figures it on t. iv., and says it is a high alpine species (first found by Kotschy), limited to the mountains of Cilicia and the Lebanon, up to 8000 feet. The rosy-lilac flowers with bright golden throat are remarkably beautiful.

684/1. NARCISSUS PSEUDO-NARCISSUS L., forma MCLACHLANII Druce. In this plant the corona, instead of being tubular with spreading lobes and open mouth, is barrel-shaped, and the mouth is narrower than the body. Meadow Dymock, Gloster, June 1929, Dr JOHN MCLACHLAN. G. C. DRUCE.

688/1. TAMUS COMMUNIS L., var. vel forma TRILOBATA Dr. Leicester, G. J. V. BEMROSE. Leaves three-lobed, the lateral lobes 4 cm. long from midrib, rounded at apex; the centre one 9 cm., narrowly acuminate.

706/3. SCILLA NON-SCRIPTA H. & L., var. LACAILLEI (Corbière). In examining the set of *Scilla non-scripta* of the *Herbarium Kewense* that was kindly sent me on loan, I was not much surprised to come across specimens with "flowers white and perianth long and narrow," to quote the collector's remark, found in Kent, near Shoreham, May 2, 1926 (W. B. Turrill). These accompanied the *albiflora* form with normally shaped perianth and there were but a few of each plant scattered amongst thousands of ordinary blue ones.

Under the name *Endymion Lacaillei*, Prof. L. Corbière (*Nouvelle Flore de Normandie* (1893), p. 574) made the following description of a new sub-species of *Endymion nutans* Dumort. (=*Hyacinthus non-scriptus* L.):—" Diffère de *E. nutans* par sa floraison de 15 jours plus tardive: ses fleurs blanches, inodores ou à odeur très faible ne rappelant en rien celle de la Jacinthe; un peu étalées ou arquées en dehors au sommet, mais non recourbées; à partie tubuleuse bien plus allongée et plus étroite, sensiblement rétrécie au sommet, un peu arquée (longr. 15-18 mm.; plus grand diam. 4-5 mm.). Dans *E. nutans* cette même partie tubuleuse a 12-13 mm. de long et son plus grand diam. 6-7 mm."

This plant was found near Bolbec (Seine-Inférieure) by J. A. Lacaille who, from the information I obtained but a few years ago, did cultivate it to make certain that the characters would be maintained; thus the precision that it flowers fifteen days later than the species. (Lacaille died in 1912.)

Rouy (*Flore de France* xii. (1910), p. 429) reduces *E. Lacaillei* to the *race* rank and does not add any new locality to the original one. (A typographical error is to be corrected in Rouy's flora: "larg. 12-13 mm." instead of 12-43 mm.).

I did not find any other record whatever in French publications and it seems that the plant has passed unnoticed ever since until a few specimens were found again in Seine-Inférieure—Bec-de-Mortagne, April 22, 1923, and May 4, 1924 (Ch. Broemse). Owing to the dimensions of perianths being slightly less than those given in the original description, they were submitted to Prof. Corbière, who confirmed the name as correct, adding that his *Lacaillei* was perhaps only a variety, but a notable one.

I tried at the time to match the above with the original type, but there is not such a reference in Lacaille's herbarium which is preserved in Rouen. (Cf. P. Senay: *Endymion Lacaillei* Corb. in *Bull. Soc. Linn. Seine Marit.* (1923) p. 111, 112, 120).

A few specimens were found at Tourville-les-Ifs, April 11, 1926 (P. Senay), not far from Bec-de-Mortagne, and were even more characteristic than those of this locality.

After repeatedly calling my friends' attention to this plant, it still remained unrecorded outside the Havre district, and for a while I wondered whether it was not a local variety. I had even thought it might be some micro-endemic in the process of disappearance, but I abandoned the hypothesis after seeing four specimens gathered near Havre, at Gainneville, May, 1925 (G. Férée d'Arcour) and which, from the dimensions of their perianths, were intermediate between *E. nutans* and *E. Lacaillei*.

The discovery near Paris, in the forest of Meudon, **May**, 1927 (M. Debray), of a few specimens coming more under *E. Lacaillei* than the species largely extended the geographical area of this variety which, therefore, was no longer exclusively Norman. It has been shown above that neither was it strictly French and this may incite botanists to look for it in England, where the wild hyacinth is not an uncommon sight.

My friend's conclusions (Cf. M. Debray: *A propos d'Endymion Lacaillei* Corb. in *Bull. Soc. Linn. Seine Mar.* (1927), 99, 100) is that, besides the other characters, the difference lies more in the relation between the length and diameter than in their respective sizes, the ratio being > 3 to 1 for *E. Lacaillei* and < 2 to 1 for *E. nutans*. But we have seen that intermediate forms occur and therefore one may conclude that the true *Lacaillei* is neither a sub-species nor a race, but the extreme of a series leading to this variety of which the Shoreham specimens (19 flowers) are the most typical ever seen by the writer.

Hybridity is out of the question, the pollen of all the specimens mentioned in this note being perfect.

By the way the correct name, for those who do not admit the genus *Endymion*, should be *Scilla non-scripta* (L.) Hoffmg. & Link, var. *Lacaillei* (Corb.) Senay comb. nov.

We have seen that its main characteristic lies in the perianth being longer and narrower than in the species. As a matter of fact, the slenderness of the flowers is striking and the plant is easily recognisable once one has seen it alive while it does not appear so neatly on the dried material. Not less striking is the colour of the flowers, which are pure white (like those of *Convallaria majalis* L.) while they are white with a bluish hue, sometimes variegated, in the *albiflora* form (or sub-variety) of the species. I even have a specimen (Tourville-les-Ifs) of

E. Lacaillei with one rudimentary flower greenish* at the apex, exactly like *Polygonatum multiflorum* All. (The fruit is in normal state of development).

It remains to find a blue-flowered variety morphologically parallel to *Lacaillei.* I have examined thousands of flowers and was unable to detect such a specimen so far.

DIMENSIONS OF PERIANTHS.

	Original Lacaillei (Bolbec).	(Bec-de-Mortagne)	(Tourville-les-Ifs).	(Forêt-de Meudon.	(Gainneville) 4 specimens.		Shoreham 19 flowers.
Length, ·	15-18 mm.	12-15 mm.	15 17 mm.	9-14 mm.	7-9	10-11	15-18 mm.
Greater diameter, ·	4-5 mm.	3-4 mm.	4-5 mm.	3 4 mm.	3-5	4-5	3-5 mm.
Ration (†),	$\frac{3.66}{1}$	$> \frac{3.5}{1}$	$\frac{3.7}{1}$	$\frac{3.5}{1}$	$\frac{1.8}{1}$	$> \frac{2.4}{1}$	$> \frac{3.8}{1}$
		1 flower			11-12	10 11	
		14 × 3			4-5	3-3.5	
		$= \frac{4.6}{1}$			$\frac{2.6}{1}$	$\frac{3.3}{1}$	

(†) Average of all the flowers.

PIERRE SENAY.

In my herbarium M. Senay detects *Lacaillei*, gathered by me at Brickhill, Bucks, in 1898; Mickleton Wood, *E. C. Townsend*, 1844 (? Gloster), and tending towards it from Beardsall, Derby, 1845, coll. *Ansell.* G. C. DRUCE.

718/16. JUNCUS TENUIS Willd. This name, as used for the plant found in the British Isles, is not correct. K. M. Mackenzie (*Bull. Torrey Club*, 25, 1929) says that Willdenow's plant has "vaginis adpressis ore nudis." The earlier name for our plant seems to be *J. bicornis* Michx. Fl. Bor. Am., i., 191, 1903 (earlier than Smith's *gracilis* E. B. 31, t. 2174, 1810, non Roth, 1788). The next name to *bicornis* (should that not be available) is *J. macer* S. F. Gray Nat. Arr., ii., 164, 1821. *J. tenuis* Willd. Sp. Pl., ii., 214, 1799 = *J. dichotomus* Ell. Bot. S. Carol. and Georgia, 406, 1817. Our plant should therefore stand as *J. bicornis* Michx. (vel emend. Ellcott).

737/13. POTAMOGETON LUCENS × PERFOLIATUS = × P. KUPFFERII A. Bennett in Journ. Bot., 103, 1928. Grand Junction Canal, near Bone Mill, Market Harborough, Leicester, G. CHESTER. = P. LONGIFOLIUS Gay × PERFOLIATUS Kupffer Asch. & Graebner in Engl. Pflanz. iv., 2, 137; Hagström Crit. Res. Pot., 245. *P. decipiens*, f. *memelanus* Hagstr., 245. I could only see ordinary *decipiens* in the Canal there last August, and even Bennett's own specimen does not appear to be identical with the original description.

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*The cyanic series being green, bluish-green, blue, purple, red and pink, would not certain flowers return accidentally to some ancestral coloration?

753/7. CAREX INFLATA Huds., var. (*monstrosa*) ZYGOSTACHYA Druce. Found near St Austell's, Cornwall, in 1928, growing on the top of a hedgebank, as a clump thrown up from the neighbouring ditch, by Mr WILLIAM TRESIDDER. The inflorescence is mixed, male and female, and compound. G. C. DRUCE.

753/46. C. GRACILIS Curt., var. GRACILESCENS Almq. C. E. SALMON (*Journ. Bot.*, 333, 1929) states that Kükenthal has said that specimens labelled as above he refers to his *angustifolia*. These were collected near Ilkley. See *Rep. B.E.C.*, 402, 1928, where the specimens are referred to as *gracilescens*. Kükenthal says *C. gracilis* Curt., var. *gracilescens* Almq. is unknown to him. It is not mentioned in Hartmann *Handb. Skand. Flora* nor in Neuman *Sveriges Flora*. Salmon says he has been "equally unsuccessful in finding any reference to this mysterious variety: it had better be deleted from the 'London Catalogue.'"

The var. *gracilescens* Almquist was first introduced into British Botanical literature by Arthur Bennett in *Rep. B.E.C.*, 384, 1891, as *C. acuta*, var. *gracilescens* Almquist from Bala. E. F. Linton sent specimens to the Club in 1893 from Christchurch, Hants. There are many notices of it in our Reports. In *Rep. B.E.C.*, 403, 1908, it was recorded (see above) from Ilkley, and there I pointed out that Kükenthal did not refer to it, even in synonymy. *In Rep. B.E.C.*, 170, 1914, Bennett again alludes to it and says of my Northamptonshire specimens that "they agree very closely with specimens so named for me by Dr Almquist." The question arises whether this is only a MS. name or whether it has been published by Almquist. We have a definite fact that Almquist named Cambridge plants var. *gracilescens*, and this may precede Kükenthal's name *angustifolia*. My memory has it that Lange also used *gracilescens* Almq. for one of my English plants. I was making a close study of *gracilis* in the early nineties, and I see in *Fl. Berks.* p. 541, that I used var. *gracilescens*, and said that I distributed it through the B.E.C. in 1892. I may add that Stewart used the name *C. acuta*, var. *gracilis* Uechtritz (*Rep. B.E.C.*, 97, 1883), but mistakenly for the plant he had under review was *C. aquatilis* not *acuta*. On present knowledge I shall allow it to remain in my *List*.—G. C. DRUCE.

827/19(2). BROMUS BRITANNICUS I. A. Williams in Journ. Bot., 65, 1929. Syn. *B. hordeaceus*, var. *pseudo-racemosus* Druce in Hayward's Botanist's Pocket Book Suppl. Mr Williams, emphasising the distinguishing characters, lays stress on the upper pale being much shorter than the caryopsis and ciliate up about two-thirds of its length only. Caryopsis, as it comes to maturity, reaches quite or almost to the top of the lower pale, the tuft of the whitish hairs at the top of the caryopsis being eventually easily visible in the sinus between the points of the lower pale or projecting beyond them. Spikelets small, 10-11 mm. long, 4-5 mm. broad; in *hordeaceus*, 50-100 per cent. longer. It has been recorded from Par, E. Cornwall, MEDLIN: Tickenham, N. Somerset, 1915, Miss ROPER; Warminster, S.

Wilts, 1903, E. S. Marshall, *Hb. Brit. Mus.*; Frensham, N. Hants, I. A. Williams; Rottingdean, E. Sussex, T. Hilton, *Hb. Kew*; Eynsford, W. Kent, 1895, E. S. Marshall, *Hb. Brit. Mus.*; Betchworth, Surrey, 1867, J. L. Warren, *Hb. Brit. Mus.*; Wanborough, Surrey, 1867, etc., Watson, *Hb. Brit. Mus.*: Finsbury Park, Middlesex, 1871, A. French, *Hb. Brit. Mus.*; Flitcham, W. Norfolk, 1926, Hubbard, *Hb. Kew*; Dowdeswell, E. Gloster, 1836, W. Borrer, *Hb. Kew*; Hatchmere, Cheshire, 1921, Adamson, *Hb. Brit. Mus.*; Thirsk, N.E. Yorks, 1864, Baker: Meanwood, M.-W. Yorks, 1914, F. A. Lees; Brampton (type specimens), Cumberland, 1928, I. A. Williams; Glen Clova, Angus, 1904, E. S. Marshall, *Hb. Brit. Mus.*; Tomintoul, Banff, 1905, E. S. Marshall [2881]; Deerness, Orkney, Magnus Spence.

My own attention was first directed to this form by beautiful fresh specimens which were sent to me by Mr Fraser of Leith, which he had gathered in Mid-Perth. At the time I was very occupied and sent them with some other grasses to one of the National Herbaria, where they were named *B. mollis*, var. *pseudo-racemosus* (Asch. & Graeb.) I then vainly tried to obtain authentic examples of that variety. It seems to me to well deserve the grade given to it by Mr Williams.

844/7(2). Equisetum occidentale (Hy) Coste. Pour abréger, je présenterai sous forme de tableau, comme pour la précédente, les variétés et formes de cette espèce observées dans l'ouest de la France, me bornant à signaler tout d'abord une race dominante qui semble la seule répandue dans cette région et contraste avec le véritable *hiemale* de l'Est par les caractères suivants:

E. hiemale genuinum.	E. hiemale, var. occidentale Nobis.
Gaines courtes, à dents toujours caduques; entrenoeuds gros et distinctement renflés en leur milieu; tubercules siliceux de la carène proéminents et sur deux rangées régulières; tige robuste, très rude.	Gaines plus longues, à dents caduques ou persistantes; entrenoeuds plus étroits et plus allongés, peu ou point renflés au milieu; tubercules siliceux peu proéminents et confluents en bandelettes transversales; tige aussi élevée, mais bien plus grêle.

En outre, dans la plante de l'Ouest, les faisceaux de sclérenchyme ne s'avancent pas aussi loin en profondeur vers le cylindre central, et ils en demeurent séparés par deux assises de larges cellules de parenchyme. Sa propension à varier doit être aussi plus grande, au moins sous le rapport de la ramification, car il serait inexact de lui appliquer la phrase suivante de Duval-Jouve, qui a pu dire de la plante de l'Est: "A l'état normal cette espèce est absolument sans rameaux, et c'est encore aller trop loin que de dire avec M. Grenier 'tiges unes et rarement subrameuses.'"

C'est le type de l'espèce que l'on trouve distribué habituellement dans les exsiccatas, qu'il suffise de citer les suivants:— Société Dauphinoise, n. 1913 bis (1878); Société Rochelaise (1879).

Rouy, Flore de France, Tome 14, p. 503.

a. GENUINUM A. Br. in Flora, 1839, p. 308; Hy, *l.c.*, p. lxi.—Tiges robustes, très rudes, à entrenoeuds renflés au milieu; gaînes courtes; tubercules siliceux de la carène saillants, et régulièrement bisériés.

b. OCCIDENTALE (Hy, *l.c.*, p. lxi., excl. var. *viride* Milde, et in Bull. Soc. Rochel., 1891, p. 57, pro parte) Nob.—Exs.: Rochel., 2969.—Tiges aussi élevées que chez a., mais bien plus grêles, à entrenoeuds plus allongés, peu ou point renflés; gaînes moins courtes; tubercules siliceux de la carène peu proéminents et confluents en bandelettes transversales.

Coste, Flore de la France, vol. iii., p. 714.

EQUISETUM OCCIDENTALE Hy (*E. trachyodon* Bor., non A. Br.).—Sous-espèce du précédent [*hyemale*]. Plante vivace de 50 cm. à 1 mètre, à *tiges* assez grêles, non renflées entre les noeuds, moins rudes, *à côtes planes*, simples ou parfois plus ou moins rameuses; *gaines cylindriques, sensiblement plus longues que larges*, étroitement appliquées, *à dents caduques* ou souvent persistantes et scarieuses, *à carène parcourue par un sillon bien marqué, mais pourvue de tubercules peu proéminents et confluents* en bandelettes transversales.

Varie à côtes convexes, gaînes un peu dilatées (*E. paleaceum* Schleicher).

Lieux sablonneux humides, surtout dans l'Ouest et le Centre.—Europe occidentale et centrale. Avril-Septembre.

Mais cette plante ne semble pas exister dans l'ouest de la France, ou, du moins, elle doit y être fort rare; car je ne l'ai jamais observée sur place, ni vue de cette provenance dans aucun herbier M. Foucaud m'a communiqué des échantillons fort nombreux recueillis dans toute la région du littoral, et aucun d'eux ne s'y rapportait.

Ses localités les plus rapprochées, à ma connaissance, sont l'Auvergne et les environs de Paris; il serait intéressant de chercher la vraie limite occidentale de ce beau type des pays froids.

Il y aurait un égal intérêt à déterminer jusqu'où s'avance dans la direction de l'est l'autre plante plus grêle et moins rude, qui empiète assez loin sur le domaine de sa rivale, puisque j'en ai vu de beaux specimens de Suisse et des bords du Rhin. J'incline à croire que les diverses variétés décrites par Milde dans ses "Filices Europae" appartiennent à cette race plutôt qu'au vrai type, mais cette présomption ne reposant que sur les descriptions incomplètes données par l'auteur allemand, aurait besoin d'être vérifiée sur des échantillons authentiques. Cette variété, du reste, a souvent été prise pour le type et distribuée en divers exsiccatas. Citons: Mougeot et Nestler, Stirp., n. 302, pr. p. (échantillon de droite, dans mon exemplaire); Billot, n. 2191 (un des échantillons appartient au type, l'autre à dents persistantes et scarieuses aux bords est la var. *Doellii*); Magnier, Flora select. 1346.

Les variétés observées dans l'ouest de la France peuvent se subordonner comme suit:—

A. Dents des gaînes caduques; tige robuste de 15 à 30 côtes.
  a. Tige simple, ou un peu rameuse seulement apres mutilation, ... Form *normalis.*
  b. Tige rameuse, sans mutilation, ... Form *ramigera.*
  c. Tige très rameuse, à rameux très allongés, capillaires, Form *capillaris.*

B. Dents persistantes, au moins sur les gaînes supérieures de la tige, souvent rapprochées et soudées plusieurs ensemble, non sillonnées: plante très grêle (7 à 12 côtes), ... Var. *viride* Milde.

Our *E. occidentale* has been compared with specimens distributed in Dorfler's Herbarium, 4193, from Gallia, Basses-Pyrenées, secus quam quae ducit ad " Sanctae Anna " prope Hendaye, July 1900, leg. E. J. Neyrant. They seem identical, and we may safely call it *E. occidentale.*

Its history is curious. When I was staying at the Ridgeway with Lady Victoria Russell, in September 1912, I noticed growing out of the loose gravel of a pathway a barren *Equisetum*, which I thought was *hyemale*, and, on making a section, felt I could only refer it to that species which was already recorded for Surrey but which had not recently been found there. I sent Lady Isabel Browne, who wished to obtain cones of *hyemale*, to visit it, but she was never able to find cones. Lady Davy who, with others, had seen *hyemale* in 1928 at Weston-super-Mare, went to the Ridgeway this year and saw the *Equisetum*, which she told me seemed different from the Somerset species. So I went over with her, and found in the seventeen years which had elapsed since I first found it that the plant had spread much, not only on the paths, but into the adjoining garden and even into the adjacent field, and was in more luxuriant growth. It was clearly distinct from *hyemale*, and on reference to the Abbé Coste's *Flore de France*, we found he described and figured it on t. 4351, raising it from the varietal grade originally given to it by the Abbé Hy to full specific rank. Its habitat is Europe, occidental and central, growing in moist sandy places throughout the west and central France. It was mistaken by Boreau for *E. trachyodon.* The question is as to its indigenity. The garden was laid out by Lord Arthur Russell from a wild piece of grass-land, and my assumption, on first seeing it there and identifying it as *hyemale*, was that it might have been a native occupant of the soil, and had pushed its way through the gravel pathway. But it must be remembered that Lord and Lady Arthur Russell brought many roses and other plants from France, and some roots of the *Equisetum* may have found their way to this place with the soil. Until it has been found in a natural habitat we cannot claim it as a British species, but its occurrence in this garden should stimulate workers to make a minute search in the stations for which *hyemale* is recorded. I have searched the National Herbaria but only *hyemale* is shown in them. *Hyemale* is the species growing near Cardiff, Weston-super-Mare, Boat of Garten, etc.

E. occidentale may be easily recognised and distinguished by the stem between the nodes being cylindrical, not, as in *hyemale*, widest in the middle; by its colour being yellowish, not bluish or ashy green; by its greater flexibility, less harshness, and brittleness of texture, and by its taller, rather drooping (not stiff, erect), habit. G. C. DRUCE.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1929.

(Owing to exigencies of space and the erratic receipt of foreign works this is necessarily incomplete.)

AELLEN, PAUL. Beitrag zur Systematik der Chenopodium-Arten. Amerikas Vorweigend auf grund der Sammlung des United States National Museum, Washington, DC. Fedde Rep., vol. 36, 31-64, 1929.

The localities of 21 species, and numerous varieties are cited. They include:—1. *C. Ambrosioides* L., with var. *suffruticosum*, var. *anthelminticum*, sub-sp. *chilense*, var. *denudatum* (Phil.) Aell., var. *andicola*, var. *querciforme* (Murr) Aell., sub-sp. *Burkartii* Aell., sub-sp. *obovatum* (Moq.) Aell., sub-sp. *retusum* (Juss.) Aell. 2. *C. Botrys*. 3. *C. foetidum*. 4. *C. incisum*. 5. *C. aristatum*. 6. *C. bipinnatifidum*. 7. *C. bonariense*. 8. *C. crassifolium*, with var. *Degenianum*. 9. *C. macrospermum*. 10. *C. frigidum*. 11. *C. capitatum* (*Blitum*). 12. *C. virgatum* (*Blitum*). 13. *C. californicum*. 14. *C. antarcticum*. 15. *C. mexicanum*. 16. *C. glaucum*, with sub-sp. *salinum*, sub-sp. *pulchrum*, sub-sp. *ambiguum* (R. Br.). 17. *C. rubrum*. 18. *C. Parodii*. 19. *C. carinatum* (R. Br.) 20. *C. Berlandieri*, with sub-sp. *Zschackei* (Murr) Zobel, sub-sp. *platyphyllum* (Issler) Murr, sub-sp. *Ludwigianum* Aell., sub-sp. *pseudopetiolare* Aell., sub-sp. *Esanae* Aell., sub-sp. *Boscianum* Aell. 21. *C. Bushianum* Aell.

Fedde Rep., 119-161. Additional species of Chenopodium:—22. *C. macrocalycinum* Aell. 23. *C. arizonicum*. 24. *C. Watsoni*. 25. *C. hircinum*, with f. *deminutum*, var. *andinum*, var. *rhombicum*, sub-sp. *catamarcense*, sub-sp. *Milleanum*. 26. *C. philippianum* Aell. 27. *C. Quinoa*. 28. *C. pallescens*. 29. *C. sandwicheum*. 30. *C. carnulosum*. 31. *C. pallidicaule* Aell. 32. *C. album*, with many varieties, including *lanceolatum* Muhl. 33. *C. Zobelii* Ludwig. 34. *C. opulifolium*. 35. *C. leptophyllum* Nutt., with var. *Leptophylloides*. 36. *C. hians*. 37. *C. inamoenum*. 38. *C. Vulvaria*. 39. *C. atrovirens*. 40. *C. subglabrum*. 41. *C. Fremontii*. 42. *C. incanium* Heller. 43. *C. gigantospermum*. 44. *C. papulosum* Moq. 45. *C. petiolare* (*paniculatum* Murr). 46. *C. hastatum*. 47. *C. pileomayense*. 48. *C. cordobense*. 49. *C. lenticulare*. 50. *C. Hyloides*. 51. *C. Covillei*. 52. *C. Standleyanum*. 53. *C. glaucophyllum*. 54. *C. missouriense*. 55. *C. murale*. 56. *C. urbicum*, and several hybrids.

These two papers form an extremely valuable contribution to the studies of the members of this critical genus.

Fedde Rep., 215, 1929. *Chenopodium rugosum* Aell., from Siberia.

Chenopodium strictum Roth, in *Nov. Pl.*, 180, 1821. Ein alterer Name für *C. striatum* (Kras.) Murr, 1896, with the reduction of f. *erosum* (Murr), f. *glaucescens* (Murr), and *rotundatum* (Sav. et Rayss.).

Annals of Botany. January, April, July, October. Editors: V. H. Blackman, Sc.D., F.R.S., and R. Thaxter, M.A., Ph.D. £3 per annum. Chromosome Numbers and Relationship of North American species of *Viola*, with sixty figures, J. Clausen.

Becherer, A. Systematik und Floristik der Gefasspflanzen, in Berichte der Schweiz. Bot. Gesell., heft 38, 1929. Includes numerous points of nomenclatorial interest. Nomina Honckengyna Neglecta Candollea, iv., 59, 1929. Pteridologische Beiträge, *l.c.*, 24, 1929. Der Botanisches Name der Stachelbeere (Gooseberry), in Rep. Spec. Nov., vol. 27, December 1929.

Belgique. Bulletin de la Societe Royale de Botanique. Tome xi., fasc. 1, 1928. La Dispersion des *Rubus* en Belgique, by A. Charlet, L. Magnel and A. Marechal. The species are arranged according to the work of Sudre, 76 being enumerated, as well as numerous hybrids. There is also a note on the Role des *Rubus* dans l'Evolution Générale, by J. Houzean de Lehaie. R. Naveau records f. *Isoetoides* of *Littorella* in Campnil. Maurice Hocquette (p. 37) has a contribution towards a Monograph of *Agrostis alpina*. Tome xi., fasc. 2, 1929. J. Houzean de Lehaie contributes Considérations sur la Systématique Génétique des Orchidées Belges, p. 108. Of *O. Morio* he gives the characters of 64 forms. A. Monoyer writes on the Comparative Morphology of *Scirpus sylvaticus* and *S. lacustris*.

Bemrose, G. J. V. Contributions to the Flora of Rutland. Reprint from Trans. Leicester Literary and Philosophical Society, 1928. It may be recalled that Candler's List in the Victoria County History enumerated 665 species. Among the specially interesting plants are *Linum anglicum*, *Trifolium ochroleucon*, *Anemone Pulsatilla* and *Astragalus danicus*. Closer attention should be given to the nomenclature of the plants. *O. major* L. and *O. elatior* are the same thing. We look forward with interest to a more complete work.

Bews, J. W., M.A., D.Sc. The World's Grasses. Their Differentiation, Distribution, Economics, and Ecology. Pp. 408. Longmans, Green & Co., London, 1929; 21/- We must congratulate Dr Bews upon the production of another useful volume. In this work there is a general account of the differentiation of all the known genera of grasses and their distribution, together with notes on all the more important economic species. The author also deals with the ecology of the world's grassland. The introductory part treats of the inflorescence and its parts, seed-dispersal, germination and cytology. The second chapter gives a clever general differentiation of the tribes and genera. The third supplies a key to the tribes and genera. 483 of the latter are described in the clavis. It must be noted, however, that this number is raised by many genera having two references, *i.e.*, *Koeleria*. Dalla Torre and Harms in the *Genera Siphonogammarum* give 301 genera. Durand in the *Generum Phanerogamarum* has 313, and Uphof in *Die*

Pflanzengattung, 316. It is needless to say that the arrangement in all four works is different. It must be remembered that, since the last three works were written, Dr Stapf's activities have added a large number of genera which previously were in a subordinate position, and also some that are actually new. The key in Dr Bews' work occupies 44 pages. We notice that *Vulpia* is kept distinct from *Festuca*, *Leersia* from *Oryza* and *Phragmites* from *Arundo*. *Bromus* includes *Serrafalcus*. *Glyceria* is separated from *Puccinellia*. We are glad to see *Atropis* relegated to the shades. *Digitaria* and *Echinochloa* are separated from *Panicum*, but *Deyeuxia* is merged into *Calamagrostis*. *Spartina maritima* is used instead of *S. stricta*. Our *Festuca rigida* is called *Scleropoa*. It is a distinct little grass which deserved a generic grade of its own. In the Distribution of the Genera the approximate number of species is given under each genus, and also their geographical distribution. 73 species are assigned to *Bambusa*, 200 to *Poa*. The agricultural uses are also given. Under *Triticum*, Percival's views on the wheat are aptly condensed. *Agrostis palustris* is used instead of *A. alba*, and *A. tenuis* instead of *A. capillaris*. Under *Ammophila*, *A. baltica* is "a variety, or closely allied species," its possible hybrid origin being ignored. *Gastridium australe* is used instead of the older *G. ventricosum*. And so, too, *Phalaris Boehmeri* is taken instead of the earlier *P. Phalaroides*. Our alien, *Panicum colonum*, is put, with *Crus-galli*, into the genus *Echinochloa*. There is a key to the varieties of *Setaria italica*. In his statistical summary, Dr Bews gives 483 genera with 5871 species. A large portion of the book is used to discuss general ecology, and this is done in an able manner. Some botanists would say that *Festuca pratensis*, *elatior* and *arundinacea* are one species, yet it is stated that the two former are less rust and drought resistant than *arundinacea*, which is grown for these reasons in S. Africa and called the New Zealand Tall Fescue. The appendix must not be lost sight of since much new information is given, especially on the new genera of the Bambuseae. There is an extensive Bibliography. To the student of grasses, this work will be found to be most useful.

BOSE, Sir JAGADIS CHUNDER, M.A., D.Sc., F.R.S., etc. THE MOTOR MECHANISM OF PLANTS. 8vo., pp. xxv., 429, tt. 242. Longmans, Green & Co., London, New York, Toronto, 1928; 21/-. "In this volume, the author has brought together the results of his researches on the movements of plants, which have been published from time to time in previous works. They relate not only to the visible external movements, but also to the invisible internal movements concerned with the propulsion of sap." Sir Jagadis first announced his discoveries in the motor mechanism of plants in an Evening Meeting of the Royal Institution, 29 years ago, when he said every plant and each organ of every plant responds to stimulation, the excitation being manifested by an electric response of galvanometric negativity. This was elaborated in 1902 in his work, "Response in the Living and non Living." Continuing his work he demonstrated that not only "sensitive" plants but ordinary plants as well respond to stimulation by a mechanical movement, the response being recorded by automatic instruments invented by Sir Jagadis (see his volume on "Plant Response," 1906). In his "Comparative Electro-Physiology," 1907, further advances were made. So striking were the results that a spirit of opposition was roused which is represented in a review of his "Comparative Electro-Physiology" which appeared in *Nature*, March 8, 1908, where it says that "the whole book abounds in interesting matter skilfully woven together, and would be recommended as of great value, *if it did not continually arouse our incredulity*" [the italics are mine]. It was my privilege to see, in the early stages, his meticulous care in experimenting and the extraordinary high magnification of the movements which resulted from his stimulation of the plant as recorded by the most ingenious instruments he had devised. I was not among the doubters. One saw the effects of the injection of strychnia, and the effects of the electric stimuli, and so great was the magnification that we saw wheat actually grow. But the incredulity, after all, was perhaps not unnatural since botanical physiology had lagged behind that of the animal kingdom, since it lacked the very delicate instruments which were designed by Sir Jagadis. A controversy in "The Times" in 1920 led to the matter being submitted to an enquiry by a committee of the Royal Society, which included Sir William Bragg, and they reported that they were satisfied that the growth of the plant and its response to stimulation were correctly recorded by his instruments, at a magnification of one to ten million times. In the present volume, which is packed with the results of countless experiments, and which is copiously illustrated, the publishers have prepared a splendid volume in which its learned author has taken the opportunity of giving a more detailed account of the rhythmic peristaltic activity by which the sap is propelled in the plant. This has been correlated with animals, the result being to establish a general law in regard to the propagation of the peristaltic and antiperistaltic waves in both animals and plants, thus affording another proof of the unity of organic life. Actually there seems little or no difference in the reaction to stimulants afforded by animal or vegetable tissue. Years ago I saw Sir J. Burdon Sanderson show the electric force set forth in the movement of a tentacle of *Drosera*. We congratulate Sir Jagadis Bose on the production of such a volume as the one under consideration. Even more do we congratulate him on his quiet persevering progress and on his persistence against what at one time was a solid opposition which might have daunted one less equipped with the necessary knowledge to overcome and even to convince his opponents. That the results of his research will powerfully influence future work is quite certain.

It may well be recalled that on December 21, 1928, Sir J. C. Bose celebrated his 70th birthday, when there was an international celebration to which the Maharajah of Nepal and the Governors and Chancellors of different Universities sent their delegates. A special poem was composed for the occasion by Rabindranath Tagore. Very many congratulations were sent from various parts of the world, including

Nanking and the Sorbonne, Paris. The Senate of the University of Calcutta also posted a congratulatory telegram.

BRITISH ASSOCIATION. Burlington House, Piccadilly, London. Annual subscription, £1. The ninety-seventh meeting was held in South Africa. The Presidential address on The International Relationship of Minerals was given by Sir Thomas Holland at Johannesburg. Section K. was presided over by Prof. A. C. Seward, whose Botanical address was on Paleontology—The Botanical Records of the Rocks: with special reference to the early *Glossopteris* Flora. Jan H. Hofmeyr, President of the South African Association, delivered an inaugural address in Cape Town in July to the members of the British Association. Prof. R. S. Adamson gave a paper on the Vegetation of the Cape Peninsula, and there were discussions on July 26 on the origin and evolution of the South African Flora. Prof. Moss's paper had special reference to the Witswatersrand District. Dr E. P. Philips gave a brief sketch of the Economics of Pretoria. Dr S. Schönland's subject was South African Plant Hybrids.

BUSGEN, Dr M. THE STRUCTURE AND LIFE OF FOREST TREES. Third, revised and enlarged edition by Dr E. Münch. English translation by T. Thomson, M.Sc., University Lecturer in Forestry, University College of North Wales, Bangor. Pp. 436, tt. 172, text fig. 167. Chapman & Hall, London; 30/-. In the Preface, Dr Münch says that Dr Busgen died on July 21, 1921, and he was entrusted to prepare a third edition. How useful the work has proved is shown by its needing a third edition. Dr Münch has wisely not been content with mere verbal alterations, but has drastically reconstructed many sections or added new ones. The list of Authors has been newly compiled, and the Index has been carefully enlarged. The number of illustrations has been increased by 47. There is no doubt of the excellence of the work, and we are indebted to Mr Thomson for his careful translation. He asserts that, despite the very large output of books on the various branches of Forestry, there is no single book which deals comprehensively with the structure and life of forest-trees, and contains at the same time the results of past researches in the field, and references to the original papers.

There are fourteen Chapters, the first treating of The Form of the Tree, in which a mass of information is brought together. Under Tree Heights, Kannegeiser is cited as the authority for these maximum measurements. The tallest is *Eucalyptus amygdalina*, 155 metres, but this has been questioned, and is not admitted by many writers. I may add that I have a small piece of the bark from a tree said to be 470 feet high. The tree was burned down afterwards by the owner of the land on account of the nuisance caused by the crowd of visitors "who came to see the tree higher than the cross of St Paul's Cathedral." The next highest tree is the Californian *Sequoia*, 102 metres. *Ceiba pentandra*, from the Cameroons, is said to be 60 metres. The greatest tree ages cited are *Taxus baccata*, 3000 years; *Juniper canescens*, 2000 years; *Quercus Robur*, 1500 years; the Sweet Chestnut, 700 years (probably understated); and the Sycamore, 600 years. The girth-figures include Sweet Chestnut, 15.20 metres; Oak, 15.20; Lime, 17; Yew, 15; but this does not include the girth assigned to the great Chestnut of Etna which is said to have been over 60 metres round. The Buds, with their structure and growth, are dealt with in chapter ii. The Wood, its formation, structure, annual rings, and technical properties, occupy chapters iv., v., vi., and vii., all excellently illustrated; the Leaves, chapter viii.; the Root, chapter ix.; Water consumption of trees, chapter x.; Mineral nutrients, chapter xi., an extremely valuable contribution. The Chapter on Flowers, Fruits, and Seedlings is peculiarly attractive. Under the Life and Structure of Forest Trees, their range of variation is alluded to. Every spruce has a different look, and if each of the more prominent forms—comb type, plate type, ribbon type, bush type—were cultivated apart, they would seem to be real varieties. That is the case with our Elms and other trees. They may have a fastigiate form, a pyramidal form, or an oak-topped form, and some of these varied forms may be true races. So too with the oak, the acorns vary immensely. To the Forester and Botanist alike, this book will prove extremely useful, and even the more general reader will find therein stimulating facts which may solve a problem. The very full citation of Authorities is not the least acceptable portion of an erudite publication.

CALIFORNIA UNIVERSITY, PUBLICATIONS OF, 1929. Plantae Elmerianae Borneense, E. D. Merrill, xiv., 1-315. Prof. U. Martelli of Florence named the Pandanaceae, five being new species. There are two new Oaks, two *Ficus*, two *Loranthus*, three *Uraria*, seven *Beilschmiedia*, three *Bauhinia*, eleven *Aglaia*, eleven *Baccaurea*, seven *Eugenia*, and eight *Diospyros* amid a multitude of others. We heartily congratulate Mr Merrill, my fellow passenger through the Spicy Isles, on the completion of this very arduous task, and the University on their generosity in publishing it. Pteridophyta Novae Calcedoniae and New Pteridophytes of Sumatra, E. B. Copeland, xiv., 353, 369, 371-378, tt. 55-61. Twelve new ferns are described, seven of which are figured. The Genus *Microdictyon*, W. A. Setchell, xiv., n. 20, pp. 453-588, tt. 105 in text. Morphological and Phenological Notes on *Zostera marina*, W. A. Setchell, *l.c.*, 389-452. New Species of *Crepis* from Central Asia, E. B. Bablock, *l.c.*, 323-333, include *C. atripappa*, *C. cineripappa*, *C. elongata*, *C. Fusca*, *C. kashmirica*, *C. simulatrix*, *C. tibetica*, *C. Wilsoni*, *C. Pratti*, and *C. yunnanensis*.

CALVERT, ALBERT F. DAFFODIL GROWING FOR PLEASURE AND PROFIT. Pp. 412, 236 full page illustrations. Dulan & Co., 1929; 21/-. The frontispiece is the "Whiteley Gem," for which Mr Calvert was awarded the Gold Medal at the London Daffodil Show, 1928. The dedication is to the well-known horticulturist, the Rev. G. H. Engleheart, who supplies a page of introduction. There are 36 chapters, the first giving the history of the Daffodil, the second being devoted to its classification. Turner, 1548, mentioned "A Few Narcissus of Dieverse Sortes," 24 in number, while Parkinson in his *Paradisus* of 1629 names nearly a hundred species, and their varieties. The classification is on Horticultural rather than on Botanical lines, and the succeeding chapters, written from the same point of view, will be very useful to the Daffodil grower. In Cornwall, between 800 and 1000 acres are under bulb culture. Guernsey, too, is much interested in them, and in 1927 sent out five millions of packages. There seems also to be a growing interest in their cultivation in Jersey. Mr P. D. Williams contributes a chapter on the Progress of the Daffodil from 1890-1910. At the show at Chiswick, in 1890, over three hundred sorts were exhibited, one of the most successful ones being a cross, *ornatus* × *poetarum* by Mr Engleheart, which was called "Horace," and which was awarded the Silver-Gilt Medal in 1894. Mr Brodie of Brodie supplies a chapter on Raising Daffodils from Seed, mention being made of the results obtained by such cultivation by Mr Engleheart, Mr P. D. Williams, Mr Dorrien-Smith, and Mr P. M. Barr. Much useful information is given on the treatment of diseases. An especially suggestive and useful paper is that on hybrids by Mr Engleheart which we are glad is repeated here for the facts remain unchanged. These hybrids are in many cases fertile. Some time ago it was announced that *odorus* was a native in Cornwall but an examination, *in situ*, showed that it had been cultivated there. It is a hybrid of *Pseudo-Narcissus* with *Jonquilla*. *N. biflorus*, which is wild near Montpellier and is thoroughly established in several British localities, is said to be a hybrid of *N. poeticus* and *N. Tazetta*, while the variable *N. incomparabilis* is a hybrid of *N. poeticus* × *N. Pseudo-Narcissus*. Barr, as we know, made many expeditions to Spain and Portugal, and he was highly successful in discovering new and interesting forms. The plates are of a very high order of excellence, and the Daffodilophist must have this book on a prominent spot of his reference shelf.

Clark-Kennedy, A. E., M.D. Stephen Hales, D.D., F.R.S. An Eighteenth Century Biography. Pp. 256, tt. 14. Cambridge University Press, 1929, 15/-. Dr Clark-Kennedy has done an essential service in producing this excellent work. It may be remembered that he gave an address on Corpus Christi day, when the Master and Fellows of Corpus Christi at Cambridge celebrated the two hundred and fiftieth anniversary of the birth of Stephen Hales. During the preparation of the address, he found that in order to do justice to this remarkable man it would be necessary to write a book. Francis Darwin contributed the memoir of Hales in the *Dictionary of National Biography*. In *Makers of British Botany* (with a portrait) and in Sachs' *History of Botany* there are also given accounts of this great experimenter, giving him just praise, for it was to him that the great advance from the vegetable physiology as elaborated by Aristotle was due. It is beyond our scope to dwell upon his physiological work on animals, but

Dr Clark-Kennedy has done full justice to his most important book, that on Vegetable Statics, a small 8vo. of 376 pages, dated 1727. The Imprimatur, Isaac Newton, Pr. Reg. Soc., is dated February 16, 1726/7. As Newton died on March 20, this must have been one of the last books he signed. The book is dedicated to George, Prince of Wales, afterwards George III., and is couched in the style of his day. "And as Solomon the greatest and wisest of men deigned not to enquire into the nature of Plants, from the Cedar of Lebanon to the Hyssop that springeth out of the wall, so that it will not be an unacceptable entertainment to your Royal Highness"—a pious wish hardly carried into effect as one remembers the difficulty His Majesty in years after felt to realise how the apple got into the dumpling. But closer to the truth than the dedication is the clear and decisive way in which he asserts that plants obtain nourishment not only from the earth but also more sublimed and exalted food from the air—that wonderful fluid which is of such importance to the life of vegetables and animals. It is in this book that his researches on transpiration are recorded. When. 140 years after, Sachs was at work on the subject, he had to go back to Hales to find any results which compared with his own. Diagrams showing Hales' methods of studying the growth of plants, the pressure of blood and the rate of its flow, and on transpiration, etc., are given. In this biography not only are his scientific works described, but there is a full account of his life as a parish priest, as a trustee of the Colony of Georgia, and of his work on Ship and Prison Ventilation. The whole book is a careful tribute to a great scientific pioneer. There is also a laborious account of his forbears. It may be recalled that there is a fine portrait of Hales in Thornton's *Philosophy of Botany*, from a painting by Coates, R.A., engraved by Hopwood. Beneath the portrait is the foreground of a classic scene—an illustration of his experiments on transpiration and sap-pressure. This seems to have escaped the notice of the biographer.

CLEMENTS, FRED E. and EDITH S. CLEMENTS. ROCKY MOUNTAIN FLOWERS: an Illustrated Guide for Plant Lovers and Plant-Users. Pp. 390, 26 colour plates, and 21 black and white. Third edition. H. Wilson & Co., New York, 1928; 3.50 dollars. In this portable and attractive looking volume, the able authors have, in this, the third edition, brought together an immense amount of matter relating to a fascinating region. Not only does it give the plants of the Rocky Mountain regions, including Colorado, Wyoming, most of Montana, Northern New Mexico, Eastern Utah, Western North and South Dakota, Nebraska and Kansas but it includes all the flowers of Glacier, Yellowstone, Rocky Mountain, and Mount Verde National Parks, and the majority of those of the Grand Canyon. The colour plates include 175 species, and the line plates show 355 species. The arrangement differs from that used by Bentham and Hooker and by the Engler botanists, since it begins with the Buttercups, followed by Cruciferae, Malvaceae, Urticaceae, Euphorbiaceae, Geraniaceae, Caryophyllaceae, Polygonaceae, Chenopodiaceae, Salicaceae, Ericaceae, Boraginaceae, Scrophulariaceae, Labiatae, Rosaceae, Crassulaceae, Onagraceae, Umbelliferae, Compositae, Liliaceae, Orchidaceae, Cyperaceae, Graminaceae, and Coniferae. The Flower Chart is ingenious and shows the development of the other families from the ancestral buttercups. In this work the chart is chiefly valuable in showing the lines of evolution and relationship, and consequently in giving a clue to the arrangement of families and orders in the text. Its greatest value lies in making it possible to trace the effect of insects and wind upon the evolution of the flower, step by step. It also serves as a ready and graphic key to orders and families, and thus makes it possible to obtain such a mastery of family types as to render family keys unnecessary. An excellent clavis to the families is given, and the way to use it is clearly explained. The description of species being clear and definite, the illustrations well-chosen, well-drawn and well-coloured, make it a pleasing work. It is one which every botanist visiting that delightful region must have with him and, later on, whenever its pages are opened, scenes of beauty and of interest, and a varied and pleasing flora will bring back to his memory the places where they were seen growing in their natural surroundings. One wishes that such a work was available for the British Flora. Just as the arrangement of the families differs from that of ours, so too the divergences of nomenclature are many. The Coral-root appears as *C. innata* and not the earlier *trifida*. *Erythraea* is wrongly retained instead of *Centaurium*. *Comarum* is kept as a distinct genus. *Berula* is used, but surely unnecessarily, for *Sium erectum*. *Specularia* is chosen for the older name *Legousia*. We are glad to see the earlier name for the wood rush, *Juncoides* Adanson, is used, but our *Elodea* is given as *Philotria*. *Goodyera* appears as *Peramium*, but is not that an untenable name? The Frog Orchis is *bracteatum* under *Coeloglossum*. It is very close to, and perhaps inseparable from, *viridis*, but I think we are correct in putting our bracteate form under *Vaillantii* Tenore. One would have liked to have seen the name of the botanical author at the end of the species. This delightful volume cannot be left under the shadow of a shade, and it can assuredly be said that it is a most satisfactory work.

Clements, Edith S. Flowers of Coast and Sierra. Pp. 226, tt. 32, coloured, painted from life. H. Wilson & Co., New York, 1928. Here is another charming and distinctly useful volume treating of the flowers of the Pacific coast from Southern California to British Columbia. The plants are delightfully drawn from living specimens and the colours are well reproduced. In the introduction, Dr Clements gives a popular sketch of the evolution of plants with no uncertain voice, but it is perhaps as seasonable as some others and certainly it is more pleasantly told. Under each species many useful details are given, as that under *Ranunculus californicus*, which ornaments the low grassy hills on the Californian coast as our English Buttercups adorn our meadows, we are told that the many-petalled fragile blossoms reflect the sunshine from polished surfaces—a subject which is much interesting Dr Parkin at the present time. The seeds of this species, after being parched, are ground into flour by the Indians, and eaten without further cooking. The scarlet Larkspur is a great adornment of the dry chaparral with its six feet high stems and long spikes of brilliant scarlet-vermilion flowers. Our *Hypericum perforatum*, one of the plants figured, is frequent, but it is disliked by farmers as they find it poisonous to stock. It is also a very difficult weed to eradicate. An extraordinary saprophyte is *Sarcodes sanguinea* whose vivid red shafts shoot up magically through the pine-needles in the early spring. But their beauty has led to their being recklessly gathered and they are now under special protection. The *Pyrola rotundifolia* of the heathy mountain side is not white as with us, but has coral-coloured blossoms. Due praise is given to the Shooting-Star, *Dodecatheon Meadia*. I shall never forget my first sight of it in the meadows by the Bow River. It has a wide range—from the Atlantic to the Pacific, from Michigan to Texas, from Lower California to the Behring Straits, but other species may be included under the specific name. Several of our corn adventives are figured, including *Amsinckia intermedia*, *Phacelia*, *Orthocarpus*, etc. The name, *Mimulus luteus*, is used for the Yellow Monkey-flower. This, too, varies with chocolate-coloured blotches. The scarlet *Mimulus* is very showy. Another magnificent species is the purplish crimson-flowered *Lathyrus splendens*, which grows up to eight feet high, and there is rarely the scarlet *Astragalus coccinea* which occurs on the mountains of Southern California and has its beauty intensified by its silvery-grey foliage. *Mentzelia aurea* is a striking species, but the Californian Blazing Star, *M. laevicaulis*, has golden glossy petals, three to five inches in diameter; and is a great favourite of insect visitors. *Lobelia cardinalis*, a favourite garden flower, loves swamp and ditch banks south to Florida and west to the borders of Texas. One has not time to cite from the Compositae, a family so well represented in America. The Old Country has contributed some adventives to the list, *e.g.*, the Chicory. Dr Clements tells how if the plant is cut and put in water, it will continue to open its flower-buds for several days. It brought to my mind her telling me of this when we were in Norfolk on the International Ecological Meeting. The Lilies are well illustrated and described, but my special favourites are the glorious yellow Erythroniums. The book ends with a description of the curious-flowered *Calypso borealis*, which I first saw in Kicking Horse Pass, but it extends into Scandinavia. It is a delightful species, worth the journey to find. We are very grateful to Dr Clements for producing such a pleasing volume.

Cockayne, Dr L., F.R.S., F.N.Z.Inst. The Vegetation of New Zealand. 2nd Edition, pp. 456, tt. 106, and 3 maps. Wilhelm Engelmann, Leipzig, 1928. This forms vol. xiv. of *Die Vegetation der Erde* of Engler and Drude. The first edition, which had been in preparation for ten years, was completed in March 1914, but it was not issued till January 1921. This edition sold out in a year—a testimony to its value. Dr Cockayne was then asked by Prof. Engler and Herr W. Engelmann to prepare a second edition. He rewrote it, making it practically a new work. The area involved in this work is a most remarkable one. Although not large, it has most variable conditions. The rainfall is in some places 6000 mm. while in others it is less than 350 mm. There are, too, extremely sharp limitations of species. On one side of a mountain there may be an extremely floriferous flora, but, on crossing the crest, the opposite slope may have an entirely different vegetation, with much less colour. The author in his valuable preliminary remarks, defines his views:—1, That the term "species" can quite well be defined. 2, That the units on which it is based are virtually invariable. 3, That the contents of these is not a matter of opinion but of fact. In conjunction with Allan, in a paper on Evolution, 1916, he said that Lotsy took as the fundamental field unit, the Jordanon, which may be defined as a "group of externally alike individuals which breed true when bred among themselves." A Jordanon that is not closely related to any other Jordanon is easily recognisable in the field as "an invariable species," and such we term a simple species. More often groups of closely related Jordanons are met with, and that group we term "compound species," as the more familiar terms, "aggregate species and collective species," have now a wider and vaguer connotation. Jordanons that are sufficiently distinct to allow of effective diagnosis, we call varieties. It should be emphasised that, as so defined, the variety is of as much importance as the species. Compound species, to which in the past taxonomy has attached "intermediates," we term Linneons. It is used to include not only groups of allied Jordanons, but of the hybrids between them as well. In its widest sense it includes two or more closely related species, their Jordanons, and hybrids of all categories. This is what in practice the so called Linnean species have become, coupled not seldom with, what we later define as, Epharmones. The second chapter is devoted to the History of Botanical Investigation from the voyage of Captain Cook to the present day. A most valuable Bibliography is included. The account of the physical features of the outlying islands is very readable. The heading, Physiognomic Plants and their Life Form, shows the intimate knowledge of them the author has. It is in these and the following chapters that such an enormous amount of matter is compressed, as to place the work in the front rank of Ecological Studies. The number of species admitted is 1843, of which 166 are Filices, 20 Gymnosperms, and 1657 Angiosperms. Monocotyledons, numbering 428, and Dicotyledons, numbering 1229, belong to 109 families and 338 genera. Compositae head the list with 256 genera, followed by Filices 147, Cyperaceae 133, Gramineae 131, Umbelliferae 89, and Orchidaceae 71. Two facts come out in bold relief—(1) the number of hybrids; (2) the large percentage of endemics. The study of the hybrids has raised their number from five in 1912, to where 290 groups have been noted, belonging to 42 families and 92 genera. Hybrids of three species are known, and intergeneric hybrids occur. Of the 290 groups, there is no doubt as to the hybrid nature of 230 of them. No fewer than 42 masquerade as true species in the *Manual of the New*

Zealand Flora. It may be recalled that Sir Joseph Hooker said that he saw hybrids of *Sonchus asper* and *oleraceus* in New Zealand. I have only seen two in Britain. I thought perhaps that being outside the range of their natural distribution the ordinary repugnance at crossing had broken down, just as we find the Chenopods do on Tweedside. There they have adapted themselves to their environment so that the natural barriers are ignored. This breaks down what has been called the extreme variability of the New Zealand Flora, yet " in the ordinary taxonomic sense, if the Epharmones be excluded there is no variability whatever, but merely a polymorphy due to the grouping together as a species of two or more Jordanons, and the hybrids between them." The endemic element is remarkable. We spoke of the high percentage of endemics in the Canary Isles but it is even more remarkable in New Zealand, since they constitute 78.6% of the Vascular Flora. Taking the groups separately, 36% of the Pteridophytes, 67% of the Monocotyledons, 88% of the Dicotyledons and 20% of the Gymnosperms are endemic. There are 40 endemic genera. This is most remarkable and argues that the Flora is very ancient. It seems right to assume that tertiary New Zealand possessed a flora part of which had originated on her own soil. This was assumed by Engler and it formed a portion of his palaeoceanic element, which Cockayne named palaeozelanic. There are 38 genera common to Australia and New Zealand, but it is remarkable that such widely spread plants in Australia as Eucalyptus, Callistemon, Melaleuca, Proteaceae (only 2 in N.Z.), Dilleniaceae, Tremandeaceae, Acacia, Pultenaceae, Rutaceae, Casuarinaceae are absent. Therefore his general conclusions are that the Flora of New Zealand, notwithstanding the strong endemism, possesses two very distinct elements, not floristic only, but ecological. They have this one property in common—the power for the most part to endure a fair amount of cold. In other words the element is a temperate one. The second element, also largely endemic, consists of descendants of an ancient palaeotrophic stock, so ancient, indeed, that endemic genera have been developed as well as many distinct endemic species. It has been a singular pleasure to read this important work, and we can strongly recommend it to our members. Oddly enough, as one was reviewing it, a beautiful photograph of a fern-gully came from its distinguished author, upon whose recent receipt of the Darwin Medal of the Royal Society we have pleasure in heartily congratulating him.

COLEMAN, Mrs EDITH. Pollination of an Australian Orchid, *Cryptostylis leptochila*, by an ichneumon-wasp, in Journ. Bot., 97, 1929, with a note by Col. M. J. Godfery.

DARNELL, A. W. ORCHIDS FOR THE OUTDOOR GARDEN: for the use of Amateur Gardeners. A descriptive list of the world's Orchids that may be grown out of doors in the British Isles. Pp. 406, tt. xxii. L. Reeve & Co., Ashford, Kent, 1930; 42/-. At the first sight of this handsome volume, so well produced and illustrated, one is staggered at its dimensions, and it seems difficult to believe that all the numerous Orchids can be grown out-doors in an English garden since no fewer than 977 species are enumerated. The author has done a great service to horticulturists by its production, as these handsome plants are usually very poorly represented in our gardens. As Mr Darnell says in his preface—" The possession of a well appointed rock-garden, however small, with its moraine, 'dripping well,' boggy nooks, pools and variety of soils and aspects, enables the flower lover to bring together in a comparatively limited space, and grow to perfection, a vast number of both beautiful and interesting plants which hitherto could only be grown in districts where local conditions suited their exacting requirements. Considering the fact that a large number of the species enumerated are frequently found growing in company with many of the most cherished denizens of our rock and water gardens, in their native habitats, there seems little reason for their rarity in cultivation. Possibly they are somewhat more exacting in their cultural requirements than many other plants, but when once their likes and dislikes are understood they can be made to flourish for years with ordinary attention." The Genera are arranged in alphabetical order, and under the genus there are numerous synonyms. For instance, with *Bletilla striata*—the *Bletia hyacintha* of R. Br. and the *Limodora striatum* of Thunb. are given. This handsome species ornamented some of the thickets near the Fusa river in Japan. He says it is quite hardy in Great Britain in a sheltered half-shady spot in the rock garden in well-drained loam and leaf-soil. Unfortunately he has chosen the more recent trivial, *pallens*, instead of *Damasonium*, for our white *Cephalanthera*. The statement that the blossoms of *C. rubra* remain half open throughout their existence is not quite correct. I have photographed them fully open, and then they present as different an appearance as possible from the wretched plant figured in English Botany. We are glad to see *Corrallorhiza* has its duplicated name given. Forty-two species of *Cypripedium* are described, including *Calceolus*. The latter may be grown in the rock garden in calcareous loam and leaf-soil. Even *Disa* is included, 43 species being given. Alas, *Epipactis* (not *Helleborine*) is maintained, and *E. atrorubra* is given instead of *atropurpurea*. *Gymnadenia* is retained, in one place misspelled *Gymnadinia*. Under *Habenaria*—*intacta* is placed, which seems doubtful. Under *Ophrys*, the Spider Orchid is put as *O. aranifera*, not *O. Sphegodes*. Under *O. maculata* are included about 20 forms, including the true *maculata*, *Fuchsii* and *O'Kellyi*. Under *O. Simia*, the synonym *O. tephrosanthos* is omitted. The Butterfly Orchids are put in *Platanthera*, as is also the Frog Orchid, *Coleoprasum*. Did Zollik call the large Butterfly, *Habenaria virescens?* Was it not *Orchis virescens?* Under *P. viridis*, the Frog Orchid is given, but there is no reference to its variety, *Vaillantii*. *Orchis praetermissa* is inexcusably omitted, since its hybrids are exceedingly handsome plants and are often cultivated. The hybrid with the Madeirian *speciosa* is a splendid plant, which has occurred in the gardens of Mr W. H. St Quintin and the late Sir Archibald Buchan Hepburn. This splendid volume is packed with useful information and should lead to the cultivation of many of these beautiful plants. Incidentally, let us hope that it may lessen the destruction of our native species. What a treat it would be to see in some of the gardens in the west of England and in Ireland a large number of the exotic terrestrial orchids displaying their quaint shapes and peculiar colouring. With this book for his guide the horticulturist may try the experiment with some chance of success.

DEVONSHIRE, TRANSACTIONS OF THE ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, LITERATURE AND ARTS. Vol. lxi., 89-190, 1929. Editor, Rev. G. T. Harris. Includes many plant records for the county, as also the noticeable disappearances.

DOMIN, K. Trinidad and the West Indies. Brünn, 1929. Vol. i. of the Totius Orbis Flora Photographica, pp. 64. Edited by Hugo Iltis. The photos, 9 × 12 cm., are of plants in their original association. It is brought out in three separate editions—German, French and English. Grisebach gave 83 endemic species for Trinidad, but the island has not been worked exhaustively. It has an area of 1862 square miles. Even now 50% of its surface is said to be forest, of which the Mora Forest covers an area of 70,000 acres.

DOMIN, K. The Hybrids and Garden Forms of the Genus *Pityrogamma* Link, in Rep. Rozpr. ii. Tr. Ceske Akad., vol. 38, n. 14, 1929. This includes the well known Silver and Golden Ferns. Hybrids of *Calomelanos* and *Chrysophylla* first appeared in some nurseries in Louvain. A list of the cultivated species and forms of *Pityrogamma* is given. Eleven excellent plates are supplied. We are glad to see our Jersey fern placed under its correct genus—*Anagramma*.

DRABBLE, E., D.Sc. Derbyshire Pansies, in Derbyshire Archaeological and Nat. Hist. Soc., pt. ii., 138, 1927. Twelve species are noted under the four heads—ARVENSIS, TRICOLOR, LEPIDA and LUTEA.

D'URBAN, W. S. M. Notes on Some Plants occurring in the Exeter District, in Proc. of University College Field Club and Natural History Society. Pp. 17-28, 1912-1928. Includes valuable notes on *Sagittaria heterophylla*, var. *iscana*, and *Potamogeton foliosus*. The latter, he thinks, was not introduced with timber.

EDINBURGH, TRANSACTIONS AND PROCEEDINGS OF THE BOTANICAL SOCIETY OF. Vol. xxx., pt. 2, pp. 61-186, 1929. H. B. Watt, paper on *Linaria Cymbalaria* in Scotland, p. 123. W. Balfour Gourlay communicated a paper on *Vaccinium intermedium* Ruthe on the South Pennine Moors, and on Cannock Chase, p. 131. Miss J. S. McNicoll, Notes on Strand Plants—*Salsola Kali*, p. 147. Alexander Pratt, Strand Plants—*Arenaria Peploides*, p. 157.

EDWARDS, A. ROCK GARDENS: how to Plan and Plant them. Including Wall, Paved, and Water-gardens. Pp. 320, tt. 32, text figures 8. Ward, Lock & Co., London; 7/6. This large volume, with its eight coloured plates, is a remarkably cheap and useful publication. Mr Edwards, who superintends the rock-gardens at Kew, can speak with authority on the best way of making them successfully. In plain and untechnical language, this is done in fourteen chapters. With this for his or her aid, the maker of a rock-garden cannot fail to have successful results. The illustrations are excellent and are such as to help the gardener to attain what he desires. The tables of suitable plants are well chosen with the plants arranged in alphabetical order. The alpine-house, and what to grow in it, with the times of flowering, is practical. Hardy ferns useful for the rock-garden is also handy, but why retain the name *Scolopendrium* instead of the more correct *Phyllitis*? The Oak and Beech Ferns are called *Polypodium*, and *Filix-mas* is put in the obsolete genus *Nephrodium*, and, of course, the name, *Pteris*, is still wrongly employed. The use of capitals in the specific names is erratic. The Polystichums are put under *Aspidium*. The adoption of a standard work for naming, *e.g.*, Christensen's *Index Filicum*, might advantageously be used. The coloured illustrations are effective and well chosen. *Tropaeolum polyphyllum* is cheering, as is *Primula Juliae*. Under *Alchemilla*, *A. alpina* is selected, but it is tricky in cultivation, and *A. argentea* Don is much easier to grow, is showier, and has a longer life. The book can be strongly recommended, and makes a useful and inexpensive present.

FITZPATRICK, H. M., B.Agr.Sc. Coniferae: Keys to the Genera and Species, with Economic Notes. In Scientific Proc. of the Royal Dublin Society. Pp. 189-260, 1929; 8/-. Forty-seven genera are dealt with. The first group with solitary leaves, leaves spirally arranged on the twigs, twigs woody in second year, leaves linear, contains *Abies*, *Keteleeria*, *Pseudotsuga*, *Picea*, *Tsuga* and *Taxodium*. Leaves in clusters of 2, 3, 4 or 5 has *Pinus* only. Leaves in clusters of 15-60 on short spurs, single and scattered on the long shoots which continue growth, include *Larix*, *Pseudolarix* and *Cedrus*. *Taxus*, *Taxodium* and others are excellently dealt with, as is the description of the various species. The Cyprian Cypress is kept as a distinct species, a grade which it well deserves. We can cordially recommend this as a most useful help. One wishes that more synonyms had been given, and one does not like to see a name such as *Larix europea* used. Why not the inevitable *Larix Larix* (L.) Karst.?

GARDENERS' CHRONICLE, 1929. Price 6d weekly, or 30/- per annum, post free. 5 Tavistock Street, Covent Garden, London, W.C.2. Memoir of Sir W. T. Thiselton Dyer, p. 1, and of Lord Lambourne, p. 18. Plant History in Nomenclature, Rev. Hilderic Friend. Mr N. E. Brown continues his papers on *Mesembryanthemum*. A splendid photograph of a Chrysanthemum show at Shanghai is given on p. 41. Kingdon Ward carries on his account of his Asiatic explorations. Cyclamens are treated by H. Correvon, p. 97. He says a root of *C. europaeum* lived for 60 years. *Cotoneaster Simonsii*, p. 108, is recommended as a hedge-plant. Notes from a New Zealand Plant Hunter, p. 143. *Ranunculus gramineus*, by Dr Parkin. p. 220. He observes that the petals do not have the glazed surface of *R. bulbosus* nor the vast number of stamens of the yellow-flowered species. Chile and the Andes (continued), Clarence Elliott. Botanical Tour in Cyprus, G. C. Druce. p. 356. Dr R. A. Fisher and Dr A. D. Imms have been elected Fellows of the Royal Society. Rothamstead has now three Fellows on its staff. We congratulate our member, Mr G. W. E. Loder, on his election to the Presidency of the Royal Horticultural Society on January 24, 1929. There is a portrait of him on p. 154. A good review of Turrill's Plant Life of the Balkan Peninsula is given on p. 424. Alpine and Shingle Plants of New Zealand, part ii., p. 72. Mont Serrate, at Cintra, now likely to change hands, is well described and illustrated, p. 96. Mitcham Peppermint, p. 265. The black variety is the one usually cultivated.

GENEVE. BULLETIN DE LA SOCIETE BOTANIQUE DE. Ed., R. Chodat. Vol. xx., fasc. 2. 386-488, 1928. Contains, *inter alia*—Senglet, A., La Melanogenêse chez quelques plantes d'un intérêt pharmaceutique, 7 fig. Beauverd, G., Comptes Rendu des Séances, Janv.-Dec. 1928. Includes variations in Valais of *Nigretella nigra*, and its hybrids with *Gymnadenia*. Polymorphism of *Silene acaulis*, with a new species, *S. mantziana* Beauv., from Mt. Cenis at 2100 metres, p. 480, and *S. acaulis*, var. *patula*, p. 384, var. *quadriloba* Beauv., p. 383, and of *Hedysarum obscurum*, p. 482. Vol. xxi., pp. 228, 1929. Prix, 20 frs. New species of *Bunium* (*i.e.*, *pygmaeum*, Savoy), etc., Jacq. M. Otto. Recherches expérimentales sur les Gonidies des Lichens appertenant aux genres *Parmelia* et *Cladonia*.

GODDARD, T. RUSSELL. HISTORY OF THE NATURAL HISTORY SOCIETY OF NORTHUMBERLAND, DURHAM, AND NEWCASTLE-UPON-TYNE, 1829-1929. Pp. 195, tt. 17. With a foreword by the President, Viscount Grey of Fallodon. This excellent résumé of the work of the Society could not have been entrusted to more able hands and Mr Goddard has given some very interesting details of the work and of the workers of the Society since its commencement. One order, one family, forty-nine genera, and 218 species new to science have been published in its Transactions. Mr N. J. Winch, whose herbarium is preserved in the Hancock Museum, published Remarks on the distribution of the indigenous plants of Northumberland and Durham, as connected with the geological structure of those counties, in the Transactions in 1830, and A New Flora of Northumberland and Durham, with sketches of its Climate and Physical Geography, was published by J. Gilbert Baker and G. R. Tate in 1848. In other branches of Natural History, equally good work has been accomplished. The illustrations supplied are very good, notably the likeness of Lord Grey, and there are others of the third Duke of

Northumberland, the first Baron Armstrong, W. Van Mildert—Bishop of Durham, Colonel John Joicey, M.P., the second Baron Armstrong, N. J. Winch, W. Hutton, Sir W. C. Trevelyan, and also of the two Hancocks—keen ornithologists, whose collections are the pride of the Museum which bears their name. Many botanists of note were connected with the Society. In addition to Winch and Baker, they had Sir W. C. Trevelyan who wrote on the Botany of the Faroes, Daniel Oliver, Rev. A. M. Norman, Rev. H. B. Tristram, Rev. F. J. Bigge (who introduced *Erinus* on the Roman Wall), Henry Brady, F.R.S., and H. T. Mennell. It may be well to explain that N. J. Winch bequeathed his private herbarium to the Linnean Society, where it remained for twenty-five years. On June 4, 1863, at a general meeting of that Society, an extraordinary resolution was come to, considering the terms of the bequest, to present the collection to the Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne, where it is now preserved. It contains some Roses of considerable interest.

Godfery, Colonel M. J. Recent Observations on the Pollination of *Ophrys* in Journ. Bot., 298, 1928. *Ophrys muscifera, O. arachnites*, etc., at Challes-les-Eaux, Savoie. Review of the Iconographie des Orchidées d'Europe et du Bassin Mediterranéen, by E. G. Camus and A. Camus, *l.c.*, 320, 1929.

Godwin, H. Plant Biology. An outline of the principles underlying plant activity and structure. Pp. 264, fig. 65. Cambridge University Press, 1930; 8/6. This, it is said, " is a book for first-year medical students, and for ecological students of similar status." The author has particularly emphasised the physiological point of view, and the physico-chemical background of plant-life. One has reason to think that the reference of the author that " too often students of botany not only come up to the University, but pass through its botanical courses, with far too little appreciation of the general biological subjects with which they deal " is not unjustified, and there can be no doubt that this book will afford a means whereby such a deficiency may be made good. The author discusses living and non-living matter, and shows that the ordinary definition is not so simple as it seems. As regards Plants and Animals, the simplest criterion for distinguishing one from the other is that the latter does, and the former does not, contain chlorophyll pigment. The student is taken through the various stages and has very clearly explained to him the nature of the living plants, its contents of crystalloids and colloids. The necessity of water to plant life is necessary for maintaining rigidity, and the whole class of herbaceous plants is dependent on the presence of a plentiful water supply. A somewhat heavy but necessary chapter on organic substances and their chemical characters leads on to the metabolism of the higher plants, where the difference between animal and plant " Respiration " is explained, to the latter of which the word breathing should not be applied. The Plant Cell, Photosynthesis, Yeasts and the Bacteria are well explained. The Fungi and Green Algae are next discussed. The *Fucus* and

Fumaria, are then explained. The concluding chapters describe the root, the stem and the leaf. A very wise caution is given in the concluding paragraph. Progress in knowledge "can best come by examining physiological phenomena in physico-chemical terms, and determining what things organs do, and how they do them. The nature and origin and persistence of organs is a matter to be considered closely in studies of heredity and evolution, and not to be guessed at prematurely."

Hall, Sir A. Daniel, K.C.B., LL.D., Sc.D., F.R.S. The Book of the Tulip. Pp. 224, tt. 24. Martin Hopkinson, 1929; 21/-. This is not a Monograph of the genus in the sense of Maw's "Genus Crocus." It is meant especially for those who want to grow the most attractive flowers, and to know something of their origin, cultivation, and propagation. The illustrations are from plants specially grown for the purpose. It seems strange that so conspicuous a genus did not appear in drawings and paintings of the fifteenth century. When it does appear in the records it is already in flower, with many varieties and with the peculiarities that we know to-day. The morphology and reproduction are treated of in Chapter I. In the History he cites Busbequinus, Ambassador of the Emperor Ferdinand to the Sultan, who saw Tulips or, as he wrongly called them, "tulipam." In 1572, Clusius met him in Vienna, and obtained from him a lot of seeds and several bulbs. But there was probably a second importation. Matthiolus (*Historia Plantarum*) had the first figure of a tulip in 1561. Sir David says its origin is undoubtedly Eastern, but when we try to look further back we are completely baffled. Later Tulips became very popular, and one called the "Citadel of Antwerp" was sold for 16,000 francs in 1836. The third and fourth chapters are devoted to Taxonomy and a description of the Tulip species, and chapter v. to Breaking and other sports. The classification of the Garden Tulip will prove very useful, and gives many interesting details. Under the heading of the "English Florist's Tulip" is brought together a mass of information. The Cultivation of the Tulip, given in chapter ix., is especially valuable since Sir Daniel writes with full knowledge of this important question, and he gives practical suggestions which will be much appreciated, as will his directions against plant diseases. The book is sure to have a wide sale, and it adds another to the large number of works on Florists' Flowers. It is one of the best in a very attractive series. Two misprints need correcting. The Bodleian expert mentioned in the preface is Mr Gambier Parry, and the picture of the Virgin and Child turning toward a bunch of flowers which undoubtedly contain Garden Tulips, was formerly in the collection of Sir George Holford, not Halford.

Hegi, Gustav. Zur Flora der Maloja. Vierb. Nat. Gesell., Zurich, lxxiii., 233, 1928. We find in this that *Dryopteris Villarsii* replaces *Aspidium rigidum* (as in our List) and *A. hybrida* Mill = *A. pubescens* Lam. There are two good photographs of Maloja, and a mass of useful material.

HOLMAN, RICHARD M., and WILFRED W. ROBBINS. A TEXT-BOOK OF GENERAL BOTANY FOR COLLEGES AND UNIVERSITIES. Second edition. Pp. 621, t. 415. John Wiley & Sons, New York; Chapman & Hall, London, 1928. This handsome and well-printed volume adds another to the immense number of text-books. It is not a book to carry about in the pocket. A large part of real estate must be embodied in its heavy pages, but heavy does not apply to the printed matter, for the student is told in plain and easy language the salient facts relating to the science he is studying. What a change from the repulsive text-book of our own student days! The excellent text-figures add an additional value. The book will be as useful to the British student as it has proved itself to be to the American.

HORTICULTURAL SOCIETY, JOURNAL OF THE ROYAL. lxxxiv. Edited by F. J. Chittenden. January 1929. The Sections of the genus *Primula*. Prof. W. Wright Smith and George Forrest. Thirty-two sections are used, and a good key to them is given, as well as an alternative one. The 58 illustrations are very good. The Natural Habitats of Chinese Primulas, by Dr H. Handel-Mazzetti. Asiatic Primulas for the Garden. Hon. H. D. McLaren. Primulas at Wisley. N. K. Gold. Cultivation of new and uncommon Primulas. J. Adamson. There is a good index to the *Primula* names used at the Conference in January. The opening of the New Hall, which has cost about £170,000, took place on June 26. It was stated that the membership now numbers 250,000. Dr F. A. Hampton writes on the Scent of Flowers: Hon. Vicary Gibbs on the Robinias at Aldenham and Kew: Collingwood Ingram on Notes on Japanese Cherries; N. E. Brown on the genus *Dierama*, with key to the 27 species; Marmaduke Odling on the Purple Toothwort (with photograph), at Grey Towers, the seat of Sir Charles Dorman. It first appeared there about ten years ago, but how it was introduced is not known. September 1929. A biography, with portrait, of the late Lord Lambourne forms the first portion. The portrait was painted by W. G. de Glehn, A.R.A. H. Avray Tipping gave an address on the Gardens of Pleasure in England from Plantagenet to Victorian times. It includes a description of Thornbury. Allusion is made to the gardens at Montacute, Drayton, Hampton, Althorp, Denham, Kip's View of Longleat, Holme Lacey, Chatsworth, Wrest and Bramham. Many of the glorious views were lent by the proprietors of "Country Life." Formal Parks and gardens in France. M. A. Duchesne. Colour in Garden Planting, Miss Gertrude Jekyll. Fountain and Garden Sculpture, M. Gilbert Bayes, illustrated by the Fountains of Perugia, the Bronze Boar at Mercato Vecchio, Florence, and the Fountain in the Merchant Taylor's Company's Garden, Threadneedle Street. A Modern Park, Dr Camillo Schneider. This is the Park of Graf E. Silva, Tarouca, at Pruhonice, near Prag, which extends to 500 acres, and forms a series of valleys, surrounded by woody hills with wide green slopes. Several pools of different sizes are connected by a small rivulet. It is one of our largest modern parks, and of the highest artistic value. It is, therefore, a good thing that the Czecho-Slovakian Government has taken it over as a National Park, while he, who fashioned it remains at Pruhonice until his death. The Small English Garden, M. G. Dillistone. Plant Hunting in Crete, G. P. Baker. This includes splendid photographs of *Euphorbia acanthothamnos* and *Poterium spinosum*. *Cyclamen pseudo-graecum*, the fragrant *Daphne sericea*, and *Cyclamen creticum* were in full bloom. Other plants noticed were *Ebenus creticus*, the spiny *Verbascum spinosum*, *Iris unguicularis*, *Tulipa saxatilis*, *T. cretica*, *Crocus Olivarii*, *Chionodoxa cretica*, *C. nana*, *Paeonia cretica* and many Orchids. The article is readable and gives a good idea of this most interesting island.

HURST, C. C., Ph.D. The Genetics of the Rose. Reprint from the Rose Annual for 1929. Printed for the National Rose Society by the Croydon Advertiser. Pp. 64, 1929. Major Hurst examined Rose material in three different ways—Taxonomy, Genetics, and Cytology. First, about 100 characters of each species and variety have been examined and tabulated. Second, numerous experimental crosses have been made between various species, sub-species and varieties and the results recorded and tabulated. Many known hybrids have also been analysed. Third, the chromosomes of 674 species, sub-species, varieties and hybrids have been examined and counted in various stages in both body-cells and germ-cells under high power microscopes. The results have proved to be of considerable importance. In many cases surprising and quite unexpected results have been obtained, but Dr Hurst acknowledges that very much work will have to be done to record the results already obtained. So far as he can see, we are merely on the threshold of important results. The paper is illustrated with 11 plates and many figures.

INNES, JOHN, HORTICULTURAL INSTITUTION. Conference on Polyploidy held at the Institution on January 19, 1929, to commemorate the birth of the founder, John Innes, on January 20, 1829. Mr Ernest Innes gave a short biography of the founder, and Mr J. B. S. Haldane gave the Genetics of Polyploid Plants. Dr C. C. Hurst spoke on Polyploidy as a Source of Species and Horticultural Varieties. Dr R. Ruggles Gates treated of the Origin of Polyploidy, Dr C. L. Huskins on Some Aspects of Polyploidy in relation to the Cereal Crops, and Mr M. B. Crane spoke on Polyploidy and Sterility in Cultivated Fruits. This contained some very interesting matter relating to hybrid Rubi. The basic chromosome number is 7. The Raspberry varieties " Superlative " and "Lloyd George" have 14 (the latter is unusually generous), the "Mahdi" 21, the "Veitchberry" 28, and the "Laxton Berry" 49. It is well known that the fertility and fruit production of the odd multiple forms—the triploid "Mahdi" and heptaploid "Laxton Berry" is much lower than that of even multiple and balanced chromosome forms—the diploid Raspberries, the tetraploid Veitchberry and the hexaploid Loganberry. In Prunus the basic chromosome number is eight. The somatic numbers of our commoner species are as follows:- *Prunus cerasifera* 16, *spinosa* 32, *insititia* 18, *domestica* 48, *avium* 16 and *Cerasus* 32. Hybrids of

P. insititia 48 crossed with *spinosa* 32 have the intermediate chromosome number 40. Dr C. D. Darlington's subject was the Significance of Chromosome Behaviour in Polyploids for the Theory of Meiosis, and Dr F. W. Sansome's subject, Polyploidy in the Tomato.

IRISH NATURALIST. Bimonthly. 6/- a year. Editor, J. A. S. Stendall, M.R.I.A., Deve, Haypark Avenue, Belfast. Botany, S. A. Bennett, B.A., B.Sc.; Rev. R. W. Megaw, B.A.; Prof. J. Small, D.Sc. Phenological Report, p. 136. New or Rare Plants of Ireland, G. Claridge Druce, p. 163. Grasswrack Community on Ballyholme Bay, C. T. Ingold, M.Sc. Some Plants of Northern Ireland, Miss I. M. Roper. *Erodium Ballii* was refound at Newcastle, Co. Down. *Equisetum litorale* in Ireland, R. L. Praeger, p. 191. Plants of Cappoquin, Waterford, p. 208. *Cephalanthera ensifolia* in Co. Dublin, A. W. Stelfox, p. 247. *Sisyrinchium angustifolium* in Donegal, R. L. Praeger, p. 248.

JOURNAL OF BOTANY, THE. British and Foreign, 1929. Edited by A. B. Rendle, D.Sc., F.R.S. 2/- monthly, 22/6 yearly. Notes on the Linnean Types of American Labiatae, by Dr Carl Epling, p. 1. *Mesembryanthemum* and Allied Genera, N. E. Brown, p. 17. On some Varieties of *Rosa tomentosa*, Lt.-Col. A. H. Wolley-Dod, p. 38. *Senecio erraticus* Bertol., Dr E. Drabble, p. 42. Key to the British Pansies, by Dr E. Drabble, p. 69, includes a new variety, *patula*, of *V. contempta*, from Bucks, Surrey, Sussex and Herts. Pollination of an Australian Orchid, *Cryptostylis leptochila* F. Muell., by Mrs Edith Coleman, with a note by Col. M. J. Godfery, p. 97. Notes on *Melampyrum*, C. E. Salmon, p. 105. These are on specimens examined by R. Soó. Duriaei Iter Asturicum Botanicum, C. C. Lacaita, pp. 107, 207, 255, 324. Two new Primulae from Spain, A. J. Wilmott, p. 149. Abstracts of Papers of Interest to Students of the British Flora, by E. G. B. and C. E. S., runs throughout the year. A New Variety of *Polygala serpyllifolia*, by C. E. Salmon, p. 193. Three Genistas of the Linnean Herbarium, by C. C. Lacaita, p. 199. Biography of Arthur Bennett, with portrait, p. 217. *Glyceria distans* and *G. retroflexa* in Britain, by C. E. Salmon, p. 243. South Africa Meeting of the British Association, by A. B. Rendle, pp. 247, 265, 289, 321. The Alabastra Diversa pursue their unemotional career to the 36th part, p. 270. Recent Observations on the Pollination of *Ophrys*, by Col. M. J. Godfery, p. 298. *Calluna vulgaris*, a recent adventive on Sable Island, Nova Scotia, H. St. John, p. 306, who shows that the *Calluna* was correctly described as adventive. Mr Bennett's reference was to *Potamogeton polygonifolius*, not *Calluna*, although his sentence was ambiguously worded. *Erica ciliari-tetralix*, Cornwall, by C. C. Lacaita, p. 310. *Carex* Notes, p. 332. Mr C. E. Salmon has submitted many sedges to the Pfarrer Kükenthal, our old valued referee. He passes *C. divulsa* × *remota* from Mayfield, Sussex. He also corroborates my *C. helvola* Blytt from Ben Lawers whence *C. lagopina* has not as yet been found. International Botanical Congress: Proposals on Nomenclature by British Botanists, p. 336. The eliminating of any botanist not connected with official departments is not a favourable omen. Second Supplement to Watson's Topographical Botany, by Arthur Bennett, C. E. Salmon and J. R. Matthews.

JOURNAL OF ECOLOGY. Edited by A. G. Tansley, F.R.S. 45/- per annum. Biological Equipment of Species in Relation to Competition. Woodhead, T. W., Vegetation of the Southern Pennines.

KEW BULLETIN OF MISCELLANEOUS INFORMATION, 1929. *Gardenia* or *Warneria*, p. 12. Shows that *Gardenia Jasminoides* Ellis is the correct name. But the earlier *Gardenia* Colden has precedence, see Amer. Midl. Nat., viii., 34, 1922. This equals *Triadenum* Rafin., 1808. Obituary of W. T. Thiselton-Dyer, p. 65, with portrait. New species of *Puccinellia acroxantha* Smith & Hubbard, from Orange Free State, p. 87. Dr Sprague, p. 89, shows that Bergius *Descriptiones Plantarum*, September 1767, precedes the publication of Linnaeus *Mantissa Prima*, November 1767. Fastigiate and Pyramidal Trees, W. J. Bean, p. 97. *Ulmus stricta* is said to be a true species. It is the *U. minor* Miller. The Lombardy Poplar is said to have been introduced into Britain by Lord Rochford in 1758. It is always male, yet its pollen has fertilised the female flowers of *nigra* and induced a columnar shape in some measure in its offspring. It was introduced to France in 1749. W. Marsden-Jones and W. B. Turrill continue their researches on *Silene maritima* and *S. vulgaris* (*Cucubalus*). They show, *inter alia*, that many natural hybrids occur. The Imalong Mountain, Sudan, T. F. Chipp, p. 177. The highest summit, Mt. Kinchi, 10,414 feet, was reached. *Lycopodium clavatum* and *Pteridium* occurred from 5000 feet upwards. A list of plants found is appended which include several new species, including *Coreopsis Chippii* from the summit. Violae Asiaticae Novae, Wilhelm Becker, p. 200, one of the author's last publications. New Ferns from Tropical America and the West Indies, K. Domin, p. 215. Notes on the Flora of the Nearer East, W. B. Turrill, p. 223. A Botanical Tour in South Africa, J. Hutchinson, p. 273. He gives a delightful account of his journey of 7000 miles. On one occasion he travelled with General Smuts, and my Oxford friends, the Gilletts. Over 3000 species were collected. Fastigiate and Pyramidal Trees, Vicary Gibbs, p. 285. Some Impressions of Sweden, W. Dallimore, p. 287. A New Genus of Grasses from Bechuanaland, C. E. Hubbard, p. 319.

INDEX KEWENSIS PLANTARUM PHANEROGAMARUM Supplementum Septimum Nomina et Synonyma omnium Generum et Specierum ab initio anni MDCCCXXI usque ad finem anni MDCCCCXXV, nonnulla etiam antea edita complectens ductu et consilio A. W. Hill confecerunt Herbarii Horti Regii Botanici Kewensis Curatores. Oxonii, E. preto Clarendoniano. It seems scarcely possible that it is time for another of these most valuable supplements to appear; yet here, only three years after the publication of Supplement VI., is one which contains even more pages, 260 against 222. This is in part caused by the inclusion of many of the overlooked published names, *e.g.*, *Corion*, as restored by N. E. Brown in the Supplement to English Botany, 48, 1891. It was not valid because there were other conflicting names, and so did not come into use. Oddly enough, of the four specific names cited, three of them are referred to different genera, where they were first supposed to be described. Strictly they all belong to the conserved genus *Spergularia*, however *Corion medium* and *C. rubrum* are referred to *Arenaria media* and *A. rubra* respectively; *Corion marinum* to *Buda marina*, and *C. rupestre* N. E. Br. to *Lepigonum rupestre*. If one is saturated with the earlier volumes and supplements, it would seem that these are the proper names to use. In the later numbers of the Supplement it has a different meaning, since now such names refer to the earliest name of the species. This volume is essential to every systematic botanist, and it will be of the greatest service to the horticulturist and to all of the many heads of the sciences grouped under the head of botany since its consulter is informed to which family any plant belongs, the place and date of publication of the genus and species, and its geographical home. The extracts have been made with meticulous care, and Miss M. L. Green is to be warmly congratulated upon her assiduous work in extracting them. The Index still has the advantage of having Dr T. A. Sprague as its supervisor, after 22 years of very laborious service. A new feature is "Nomina Genera nova atque neglecta sub familiis disposita," which enables one interested in any group to see what new genera have been published in the last five years. One small correction may be made. Under *Lonas annua*, the author is given as Grande, 1924; it should be Druce in *B.E.C.*, 287, 1918. Italics are not used for any of the genera. All are in the same type which is an easier plan for the printer. The typography is what we should expect from the Clarendon Press, and the appearance of this, the seventh supplement, adds another debt to the memory of Darwin who was the originator of this magnificent contribution to Botanical Literature which has already had as its Editors, Hooker, Dyer, Prain and Hill.

INDEX LONDINENSIS, containing Illustrations of Flowering Plants, Ferns, and Fern-allies. Edited by Dr Otto Stapf. The original work, Iconum Botanicarum Index, was published in 1855 at Berlin, by Dr G. A. Pritzel, W. Pamplin being the London agent. It ran to 1103 double-columned pages. The names and places of publication alone, without reductions or synonyms, were given. Despite this the author had to reject 150,000 determinations as worthless. There are fourteen pages of Bibliography, and about 107,000 references. The present work is being prepared under the auspices of the Royal Horticultural Society, who have wisely entrusted the printing of so important a work to the Clarendon Press at Oxford. In 1928 the card MS. of the first volume, with nearly 84,000 references to illustrations, was in the hands of the printers. When the remaining 5 vols. are published, the total number of entries will amount to nearly half a million. Dalla Torre and Harms' "Genera Siphonogammarum" has been used for cross reference (why not Bentham and Hooker, to keep closer in touch with the "Index Kewensis?"). The Editor's introduction is in English, and this gives a brief sketch of the life of Pritzel. The first volume consists of 547 4to. pages, from *Aa.* to *Campanopsis.* The work must be of immense value to the botanist and horticulturist. It will be completed in six volumes, at £5 5s each.

Levyns, M. R., Lecturer in Botany, University of Cape Town. A Guide to the Flora of the Cape Peninsula. Pp. 285, tt. 199. Jute & Co., Cape Town. This compact work will meet a great demand since the clear key to the Families and Genera will enable the visitor to that rich area to refer a plant to its proper place. Owing to the exigencies of space the species have had to be omitted, but under each genus the number of species included in it is given, and some reference to its members are made, while the vernacular name is often stated. The Families have been numbered and these numbers will be found in the Keys. The Keys, however, are to be recommended for use only in the Peninsula. There is an ample Glossary. Thank heaven, there is only one index, and a good one, and this also gives the number of the figure of the plant. The arrangement is based on Engler "as more in accordance with natural relationship than the older system of Bentham and Hooker." There are some strange examples of nomenclature. *Pteridium* Kuhn. is used instead of the older *Eupteris* Newman; and we find that *Cladium jamaicense*, *Wolffia Michelii* and *Nasturtium officinale* are used. Tournefort is given as the authority for several genera, but he is omitted for many others. As a matter of fact, his name should always be in brackets, because it is pre-Linnean. The authority for *Melilotus*, for instance, is Miller, or [Tourn.] Miller. See also *Linaria*, *Veronica*, *Antirrhinum* and *Marrubium*. *Limnanthemum* is given instead of the earlier *Nymphoides*. *Cryptostemma calendulaceum* Br. should be *C. Calendula* (L.) Druce. It seems strange to a Britisher that there are only four Carices in the Cape Flora, but there are 31 Pelargoniums, 99 Ericas, 24 Gladioli, 48 Disas, one of which is appropriately figured. There is only one Willow. The book is clearly printed, with few misprints, and the descriptions are terse and clear. The book would have been very greatly increased in value had the species also been described, but this may well occupy a future work by the same writer. This Flora is indispensable to the European botanist who visits the Cape Colony. It will save him wading through the heavy tomes treating of this attractive area. It deserves to be popular, and it is to be hoped that similar areas will be treated in the same manner.

Linnean Society. President, Sir Sydney F. Harmer, F.R.S., Burlington House, Piccadilly. Annual Subscription, £4. The Journal contains:—The Botanical Collections made by Capt. F. Kingdon Ward in Eastern Himalaya and Tibet, C. V. B. Marquand, pp. 149-229. Marine Algae of some German Warships in Scapa Flow, and of the Neighbouring Shore, Lilian Lyle, p. 231. The Taxonomy and Geography of the Sind Himalaya Genus, *Cremanthodum*, R. D'O. Good, p. 259. The Proceedings, November 28-May 29. Dr A. W. Hill, p. 34, alluded to the large group of wild hybrids in New Zealand in his paper on Hybridisation in the New Zealand Flora, specially mentioning the Gaultherias. E. Marsden-Jones and Dr W. B. Turrill read a paper on Hybridisation in certain genera of the British Flora, especially *Silene* and *Centaurea*, and Dr Moss contributed a paper on Some Natural Hybrids of *Clematis*, *Anemone* and *Gerbera* from the Transvaal. Dr Claridge Druce, p. 51, gave an account, illustrated with lantern slides, of his visit to Cyprus, and mentioned some new discoveries. H. W. Pugsley, p. 59, read a paper on British *Euphrasia*. The Presidential Address by Sir Sydney F. Harmer was given on May 24. It was a very able discussion of *Polyzoa*, and occupies 50 pages. The Hooker Lecture, on the "Origin of Adaptations," was given by Dr E. J. Allen, F.R.S. The obituary notices are good, noticeable those on Coulter and Dyer. The usual additions and donations to the Library occupy fifteen pages.

LONDON NATURALIST, THE. The Journal of the London Natural History Society. Hall, 40 Winchester House, Old Broad Street, London, E.C.3. President, W. E. Glegg. Bot. Sec., H. E. Spooner. *Aristolochia rotunda* L. in Surrey, p. 16. *A. Clematitis* L. in Trimen and Dyer's locality at Hampton Court, Middlesex. Brambles of Kent and Surrey, W. Watson, p. 21-26. A detailed list of the plants of the area is in the course of publication. Those included in this Report, pp. 9-16, run from Papaveraceae to Violaceae.

McKELVEY, SUSAN DELANO. THE LILAC. A Monograph, with Contributions from Ernest Henry Wilson, Keeper of the Arnold Arboretum, who gives the History and Distribution; Alfred Rehder, Curator of the Herbarium, Arnold Arboretum, who describes the genus and its sections; Theodore A. Havemeyer, President, New Horticultural Society, who describes the culture, and Dr William T. Councilman, who treats of the insect pests and diseases to which the Lilac is subject. Demy 4to., pp. 597, with 172 full-page plates, 1929. Macmillan & Co., St Martin's Street, London; £3 15/- nett. The photographs (except four) reproduced by Mr George W. Root of West Roxbury. This complete and exhaustive classification of the popular genus, *Syringa*, with cultural notes, and full descriptions of species and varieties will undoubtedly become the standard authority and reference. The appearance of the book is distinctly pleasing, and it forms a volume worthy to be placed by the side of Millais' "Rhododendrons." Its value is enhanced by the inclusion of colour-charts, reprinted from colour standards and colour nomenclature, by Robert Ridgway. A removable folder contains plates of all the colours of Lilac species and varieties, to which are keyed the text descriptions. The subject of the Monograph was suggested some years ago by Professor Charles Sprague Sargent, and during his life-time he did everything possible to further its completion.

The 28 species of Lilacs treated of in the work, with two exceptions, belong to the Asiatic area. There are two in Japan, and two—*S. vulgaris* and *S. Josikaea*—are found in central and southern Europe. *S. Emodi* and *S. affganica* are Himalayan, four are indigenous in Korea, and seven in China. The most widely distributed species are the tree-Lilacs, *S. armurensis*, and *S. pekingensis.* The first, as a large bush or small tree, grows throughout the Korean peninsula, adjacent Manchuria, and in the region bordering the Amur river. It reappears on the mountains of Japan as the var. *japonica*, and is abundant in Hokkaido, where there are trees 45 feet high. No true Lilac is indigenous in Japan. Rehder gives a most excellent account of the genus, with key to the species. *S. reflexa* is beautifully photographed, but the fine range of colours is remarkable, and must be seen to be properly realised. *S. hyacinthiflora* is a charming hybrid of *oblata* and *vulgaris*, produced in France by Lemoine. The treatment, both pictorially and literary, of *S. vulgaris* is of the first order, extending to 198 pages, with 15 full-size plates. The index is copious and correct. Indeed the whole book is one of the most satisfactory Monographs we have met with.

MARLBOROUGH, REPORT OF THE NATURAL HISTORY SOCIETY OF, for the year 1928. Pp. 84; 5/-. Printed at the Cambridge University Press. Mr Peirson contributes the Botany, which includes many records already given in our *Report*. *Glyceria distans* is a new record for the Marlborough List.

MARIE-VICTORIN, FRERE. Le Dynamisme dans la Flore du Quebec. Contr. Lab. Botanique de l'Université de Montreal, n. 13, pp. 89, 1929, with many illustrations including a good one of a marsh field of *Butomus umbellatus*. Might one suggest that the author's names should appear after the specific names in the index? *L.c.*, n. 12, pp. 163-176, 1928. Deux épibiotes remarquables de la Minganie—*Cypripedium passerinum*, nov. var. *minganense* Vict., and *Draba luteola* Green. nov. var. *minganeisii* Vict.

MARQUAND, C. V. B. The Botanical Collections made by Captain F. Kingdon Ward in the Eastern Himalaya and Tibet in 1924-5. Journ. Linn. Soc., 154, 1929. 446 species, of which 52 species and 27 varieties are new, are here described. In this excellent work, Mr Marquand had the assistance of Mr H. K. Airy Shaw. There are a new *Thalictrum* and *Ranunculus*, two Larkspurs, one Aconite, three species of *Corydalis*, *Iberidella*, three *Lychnis*, one *Myricaria*, two *Impatiens*, one *Evonymus*, three Leguminosae, nine Saxifragaceae, including *S. Kingdonii*, one *Schefflera*, one *Senecio*, one *Saussurea*, one *Cyananthus*, one *Campanula*, one *Agapetes*, one *Gaultheria*, two *Buddleia*, one *Crawfurdia*, one *Gentiana*, a new Gentianaceous genus, *Kingdon-Wardii* Marq., one *Swertia*, four *Pedicularis*, one *Plectandrus*, one *Micromeria*, one *Phlomis*, one *Salix*, one *Arisaema*—among others.

Nabelek, Dr Fr. Iter Turcico-Persicum, pars. iv. Publication de la Faculté des Sciences de l'Université Masaryk. Treats of plants gathered from Acantholimon. Included are:—A new *Plantago—thrichophylla* Nábelek, *Allium trichocephalum*, t. 4, and *A. Fedtschenkoi* Nábelek, from Kurdistan, *A. Haussknechtii*, from Aleppo, *A. rhitoreanum*, from Kurdistan, *Uropetalum Susianum*, from S.E. Persia, and *Juncus Warakensis*, from Tauro-Armeno. Part v. treats of Gramineae-Cryptogamae, with the genera *Pentatherum* (*Calamagrostis* partim), and *Anatherum* (*A. tauricolum*), t. 1, *Koeleria Dominii* Náb., t. 2, from Tauro-Armeno, *Aeluropus mesopotamicus* Náb., t. 5, from Euphrates, *Agropyron Podperae*, t. 3, and *A. Kosanii*, from Kurdistan, are described as new species.

Nature. Published by Macmillan & Co., Ltd., St Martin's Street, W.C.2. Editor, Sir R. Gregory. Weekly; 1/-. This most useful Journal goes on from strength to strength, and although necessarily the mass of matter it contains is beyond the purview of the field naturalist, yet even he cannot afford to neglect its pages. *Ranunculus acer*, subvar. *minutiflorus* Druce, in Rep. B.E.C., 24, 1923, p. 6. To this plant Dr Parkin and Dr Turrill have contributed additional knowledge. See pp. 413 and 568, where it is called a female form. When removed to garden soil it did not alter the size of the petals. The Supplements have been of great interest. A recent one on Lightning, by Dr G. C. Simpson, F.R.S., C.B., dispels a popular delusion about the actual cause of a thunderstorm. Some startling figures are given. The energy dissipated in an average lightning discharge is of the order of 3000 K.W.H. Swann says a column of air one inch long offers as much resistance to the passage of the electric current as a copper cable 30,000 million million miles long, and of the same cross section; that is, as much resistance as that of a copper cable long enough to reach from here to Arcturus and back twenty times. Although the conductivity of air is so small, yet it is by no means insignificant, since a charged insulated conductor exposed to the atmosphere loses some three per cent. of its charge a minute. Pringle's Geologic Aspects of the Channel Tunnel Scheme, p. 608. Greenland, as It Is and Was, by Prof. A. C. Seward, F.R.S., p. 456. Aspects of Fossil Botany, by Dr D. H. Scott, F.R.S., pp. 319, 350. Natural Hybrids in Plants, p. 587.

New Phytologist. Editor, A. G. Tansley, F.R.S. Cambridge University; 25/-. Seedling Development in *Calluna*, Dr M. C. Rayner, p. 377.

North Western Naturalist, The. Edited by A. A. Dallman, F.C.S., in collaboration with nine other Scientists. Vol. iv. Published by T. Buncle & Co., Arbroath. Annual Subscription, 7/6. Many of the special items are included in our New County Records, etc. Records of the meetings of various Societies in the area are given at considerable length. A. Wilson contributes some valuable notes on the Flora of

Carnedd Llewelyn, p. 53. He makes some important records in plant altitudes. N. Woodhead, p. 59, gives a paper on the Distribution of *Lloydia serotina*. Obituary notice of Thomas Porter Blunt, of Shrewsbury, aged 86, p. 74. Although not specially a botanist, he was much interested in the local Flora. He was a valued and dear friend, and was a fellow-examiner with me at the Pharmaceutical Society for many years. He took first-class honours in Natural Science from Magdalen College, Oxford, and had the honour of rowing for his College. Variation in *Veronica hybrida*, M. Gepp, p. 134. Pink-flowered forms occurred with the ordinary form in Shropshire and Montgomeryshire. This variety had long been known in Denbigh. Mr J. Griffith, of Bangor, grew it for many years, and in his garden it bred true. The white-flowered form also grew with it, and was found to be constant in culture. A note to this effect is added by the Editor. Albino *Fritillaria Meleagris* L., near Benthall Hall, Shropshire, George Potts, p. 135. Perhaps introduced by the former owner of Benthall, Mr George Maw. Flora of Cader Idris, Dr J. H. Salter, p. 136.

OSTENFELD, C. H. Genetic Studies in *Polemonium*. Experiments with *P. mexicanum* Cerv. × *P. pauciflorum* Wats. Separate from Hereditas xii., 1929.

PARKIN, JOHN. The Glossy Petals of *Ranunculus*. Annals of Botany, vol. xlii., July 1928. The glossy yellow of the buttercup petal, Dr Parkin says, is probably unique. It is confined to the single genus, *Ranunculus*, including *Ficaria* and *Ceratocephalus*. The peculiar features responsible for the gloss are:—(a) A perfectly smooth upper epidermal layer of narrow cells with hyaline contents, consisting of yellow pigment dissolved in a higher refractive oil. (b) A compact subepidermal layer crammed with starch granules. The layer, contrary to the views expressed by previous investigators, is apparently more than one cell thick. His investigation leads him to believe that glossiness is a character of first class phylogenetic, and so of taxonomic, importance within the genus, permitting it to be sharply divided into two sub-genera, the one containing the glossy, and the other the mat-petalled species.

PEARSON, H. H. W., D.Sc. Gnetales. Edited by A. C. Seward. Pp. 194, tt. iii. Cambridge University Press, 1929; 18/-. The excellent photograph which prefaces the volume recalls vividly to my mind my last sight of him. I had been to tea with General Botha in 1914, and while walking back to Cape Town over a portion of Table Mountain, I met a soldier who had been in the Oxford Post Office, just waiting to start to somewhere in Africa, when suddenly Pearson appeared. Despite the dread uncertainty of war and its consequences, he was looking forward with eagerness to continuing his researches on *Welwitschia*. Almost the last words he said, when saying good-bye, were to promise to send me photographs of this interesting group. As we know, his life was cut short ere it had well begun. He died on November 3, 1916.

Fortunately he was able to continue work and he visited the *Welwitschia* area. Gnetales is represented by three genera, *Ephedra*, *Gnetum* and *Welwitschia*. They have few species. There are five European species of *Ephedra*, and 27 extra-European, in all 32. There are about twenty-five tropical species of *Gnetum*, but *Welwitschia* is a monotypic genus, with one species only, *mirabilis*. The areas of the 32 Ephedras are given, as also the Gnetums, which are mostly lianes. Three are found in the Guianas, seven in Brazil, one in Ecuador, and one in W. Indies, while in tropical Africa the Cameroons have one, and Angola one, while tropical Asia has nineteen. Curiously enough there appears no reference to the earlier name, *Tumboa Bainesii*, given to this species by Hooker in *Gard. Chron.*, 1008, 1861. *Welwitschia* was published in the same Journal, 71, 1862. It may be remarked that this curious plant was successfully cultivated in the tropical orchid-house at Cambridge. Eight chapters are devoted to the Morphology and Anatomy of the three genera, which are illustrated by 88 good text-figures. The inter-relationship of the Gnetales is treated of in chapter v. and there is a good Bibliography. The volume is a distinctively valuable contribution to the knowledge of some very curious plants, one indeed, being " mirabile!"

Rayner, J. F. A Supplement to Townsend's Flora of Hampshire and the Isle of Wight. Pp. xix., 132, 1929; 6/-. Printed by T. Buncle & Co., Arbroath, and published and sold by the author. It is a quarter of a century since Townsend's Second Edition of the Flora was published, so it was high time for this Supplement to appear. There was a very heavy loss on Townsend's work as the sales were very small; and it was an expensive book to produce. The preface in this work strikes a somewhat despondent tone when speaking of the disappearance of some of the rarities. But even those he mentions need some corrections. For instance, *Leersia*, as it is called, has not " long vanished from the neighbourhood of Brockenhurst," for I saw it there in July. But the fact that 60,000 houses have been built in the county since the end of the war shows how rapidly the destruction of rural areas is going on. He alludes to the spread of certain species since the publication of Townsend's Flora—*Matricaria suaveolens*, *Spartina Townsendii*, *Crepis taraxacifolia*, *C. biennis*, *Mimulus guttatus* (*Langsdorfii* is a nomen abortivum), *Epilobium angustifolium* and, in a smaller degree, *Euphorbia Cyparissias*. Notwithstanding its appearance in the list of plants. *Carum Bulbocastanum* should be deleted since there is no adequate record of it in the county. *Stellaria dichotoma*, p. xiv., is a lapsus for *Silene dichotoma*. We have nothing but praise for the supplement proper, and there is an immense amount of new material added to the Flora of the county. The citations of Mr Groves might now be omitted since Mr Pearsall has supplied a most useful Monograph of the Batrachian Ranunculi. We regret to see such obsolete names as *Sisymbrium pannonicum* and *Columnae* used for *altissimum* and *orientale*, and *Erythraea* should be replaced by *Centaurium* Hill. One doubts if *Hieracium dumosum* Jord. covers all the plants given under it. And is *Hiera*-

cium aurantiacum N. P. = *brunneocroceum* Pugsley? Some of the localities of *Orobanche major* (here wrongly used in the place of *O. Rapum-genistae*), belong to *elatior*, which is the true *elatior* L. Mr Hunnybun's specimen of *Stachys germanica*, from Steephill, Isle of Wight, is not that species. I have elsewhere pointed out that it is *S. lanata*; *germanica* must be deleted. *Orchis elodes* is the true *O. maculata*. *Panicum lineare* Knocker [Krocker] should be *P. Ischaemum* Schreb. and may be corrected in another edition, which we hope Mr Rayner will one day issue. The type is clear, and there are few errors. We congratulate Mr Rayner very warmly upon producing so useful and so compact a volume which we trust will have a large sale so that its compiler will not suffer any monetary loss after all the labour he has spent upon this valuable Supplement to one of the largest and best of British County Floras.

Rayner, M. C. The Biology of Fungus Infection in the Genus *Vaccinium*, in Annals of Botany, vol. xlviii., 55, 1929. Among the results, it shows that in *Vaccinium Myrtillus* and other species ovarial infection by mycelium has been observed . . . and it is clearly impossible to raise seedlings of *Myrtillus*, free from Fungus infection, by sowing seeds of this species in sterilised soil.

Roberts, H. F. Plant Hybridization before Mendal. Princeton University Press; H. Milford, Oxford University Press, Amen House, Warwick Square, London, E.C.4. Pp. 374, tt. xxxvi., 1929; 18/-. This is the only book dealing adequately with the work in the hybridization of plants before Mendel. The pre-Mendelian work has been gone through with thoroughness and in detail, and the body of material of interest or value sifted out and clearly presented. The work of Kolreuter has been analysed with great care, and the genetic bearing of his numerous experiments brought as clearly as possible into relief. The work of the series of German hybridizers—Gartner, Wiegmann, Wichura, Nageli and Focke, as well as the work of Knight, Herbert and Laxton in England, and of Sageret, Naudin, Godron and others in France, has been thoroughly and carefully dealt with, and many interesting details of genetic value or interest rescued from oblivion. This work comes out at an opportune moment, since at present Mendelism is assumed by many people to be the alpha and omega of this subject. The author opens his discussions by alluding to the very early times when in the lower basin of the Tigris and Euphrates rivers, to-day known as Iraq, civilisation had well begun. As far back as 6000 years ago it was occupied by an orderly and settled people, who possessed both domesticated plants and animals. The culture of dates in Mesopotamia is demonstrated in the monuments erected there which have on them representations of the process of hand-pollination of the Date Palm, a tree of the greatest value. Strabo refers to 360 uses for the plant. In 1283, an Arabic writer, Kazwini, says in his book, " On the Marvels of Nature and the Singularities of Created Things "—" The Date has a striking resemblance to Man through the beauty of its erect and slender figure, its division into two distinct sexes, and the property, which is peculiar to it, of being fecundated by a sort of union." But the knowledge did not spread, nor were its effects carried further. It was left to Camerarius, when a Professor at Tubingen, in 1694, to write a letter to Prof. Michael Bernard Valentin of the University of Giessen, entitled "De Sexu Plantarum Epistola," which recounts the knowledge already obtained, and the results of his own experimental work, and here for the first time there is an actual scientific investigation into the question of the existence of sex in plants, for although earlier writers, Theophrastus and others, had alluded to the sexes in plants, they had supplied no actual experiments for determining the facts. He found by actual experimentation that pollen is indispensable to fertilisation. It was quite 50 years later before these investigations upon sex in plants received substantial recognition and before the first recorded instance of an actual experiment in hybridisation. A full and excellent record of Linnaeus' treatment of the subject is given. He describes four hybrids. One of them he made by crossing *Tragopogon pratense* with *T. porrifolius*, and the offspring had purple flowers with yellow bases. A natural hybrid, *Veronica maritima* × *Verbena officinalis*, is described by him in great detail in 1750, and a figure is given. It produced no fruit, and had to be propagated by suckers. This precedes Kolreuter's *Nicotiana* hybrid in 1760, which marks the beginning of genetic investigations. Haartman wrote a treatise on "Plantae Hybridae" in 1751, which, among other plants, includes *Trifolium hybridum*, which he thought to be *T. repens* × *T. pratense* (see p. 44). It is said to have originated not only near Upsala but near Aloa. The author does not say whether he accepts this origin for the Alsike Clover. Kolreuter's work and numerous experiments are well described, and the chapter is of great value. Through Millington, Philip Miller, James Logan, Gleditsch, Gartner, C. K. Sprengel, whose work Sachs says is "the first attempt to explain the origin of organic forms from definite relation to their environment," the development of the subject is admirably traced. The labours of T. A. Knight, an early English hybridist, are given, and there is an appreciation of him by W. W. Focke. Then Dean Herbert's experiments are given. He specialised on showy garden plants, while Knight's experiments were chiefly on fruits. In later times John Goss, Alexander Seton, and Thomas Laxton contributed their share in investigations, while Patrick Sherriff experimented with cereals. In France, Sageret, Godron and Naudin made important discoveries. Then came Verlot, the Vilmorins, and Lecoq, to carry on the work. Germany also had Weigmann (1822) and Von Gaertner, who spent 25 years in his hybridisation experiments. No fewer than 10,000 in number were carried out among 700 species belonging to eighty different families, obtaining 350 hybrid plants. Wichura (1865) experimented chiefly with Salices. Nageli (1868) presented a survey of the work of the earlier hybridisers, a year after the paper of Mendel had been published at Brunn. The excellent account is closed by a study of the work of W. O. Focke, our old Rubi specialist, who issued *Pflanzenmischlinge* in 1881, which he describes as "the most thorough and extensive single compendium yet published." Hoffmann (1855), Charles Darwin, and Francis Galton are faithfully dealt with, and the whole book is a highly valuable treatment of a subject which teems with interest. The book is well printed, well written, and well illustrated, and should have a large circulation.

SALTER, J. H., D.Sc. THE ALTITUDINAL RANGE OF FLOWERING PLANTS AND FERNS IN MID-WALES. North Western Naturalist, September-December, 1928. This publication supplies a long felt want, and it gives many new altitudes for common plants. We have plants cited whose upper limit is between 900-1000 feet, 1000-1250 feet, 1250-1500 feet, 1500-1750 feet (this includes the upper sheep-walks), 1750-2000 feet, and lastly above 2000 feet. The last are all native species. It is shown that several species reach a higher altitude in Scotland than in Mid-Wales.

SALISBURY, Dr E. J. The Biological Equipment of Species in Relation to Competition. Journal of Ecology, pp. 197-222, August 2, 1929. In this interesting paper Dr Salisbury mentions that a plant of *Verbascum Thapsus* may yield 700,000 seeds, but of these only 108 remain after six months, scattered only as far as 30 feet from the parent plant. *Clematis*, it is said, has only 2 per cent. of viable seeds. *Desmarestia loliacea* is unknown to me—can it be *Desmazeria*?

SCHROETER, C. Eine Exkursion ins Tenggergebirge (Ostjava), in Verhl. Nat. Gesell., Basel, xl., 2511, 1929. A delightful account by our veteran botanist of one of the most beautiful spots of the world. He has wonderful photographs of *Alsophlia glauca* at 1900 metres, and of the Bromo-Krater. The dunes, too, are well represented with *Styphelia pungens* as a conspicuous feature. It is very gratifying to find Dr Schroeter in such good health and spirits—may that long continue.

SCHULZ, O. E. PLANTAE SINENSIS. Collected by Dr H. Smith, 1921-2. VI. Cruciferae, pp. 157. Include a new *Erysimum*, *Cardamine*, *Luxostemon*, *Hesperis*, and *Draba remotiflora*. *Brassica juncea* occurs, the authors of this species being given as Czern. & Coss.

SCHULZ, O. E. Beitrage zur Kenntnis der Cruciferen des N.W. Himalaya-Gebirgen, in Notiz. Bot. Gart. Berlin-Dahlem, 1057, 1926 Two new species of *Arabidopsis*, four new species of *Arabis*, two new *Cardamine*, one *Cochlearia*, one *Draba*, four *Erysimum*, one *Graellsia*, one *Isatis*, one *Malcolmia*, two *Microsisymbrium*, and a new monotypic genus, *Phaeonychium* O. E. Schulz, are described. *Cheesemannia*, a new Australian Cruciferous genus, *l.c.*, 551, 1929, with five species. Hooker had put *radicata* into *Cardamine*, and two others were placed in *Nasturtium* by Cheeseman. *Fastigiata* was named an *Arabis* by Hooker.

Sirjaev, G. Generis *Trigonella* Revisio Critica, ii. Publication de la Faculté des Sciences de l'Université Masaryk. This treats of species beginning with no. 24, *laciniata* (List no. 17), to 39, *smyrnaea*. A very complete citation of localities, with maps showing distribution, are given, and lists of Icones and Exsiccatae. Two plates are supplied, t. vi. being one of *T. Falcata* from Socotra.

Soó, Dr R. Sur Systematik und Soziologie der Phanerogamen Vegetation der Ungarischen Binnengewasser, in Archiv. Balalonicum 45, 1928. A key to *Callitriche* is given on p. 58.

1a. Fructus late alatus, longitudine latior, 2 mm. latus, ... *C. stagnalis*.
1b. Fructus vix vel angustissime marginatus, ... 2.
2a. Stylus basi refractus, fructu adpresso. Fructus isodiametricus, 1.2-1.5 mm., ... *C. hamulata*.
2b. Stylus basi erectus, ... 3.
3a. Stylus 4-6 mm. longus, remanens, fructus longitudine latior, 1.2-1.5 mm. latus, ... *C. polymorpha*.
3b. Stylus 1-2 mm. longus, mox deciduus, fructu latitudine longo, 1 mm. longus, ... *C. verna* L.

Many forms are described under each species, and there is a very critical treatment of *Hippuris*, *Myriophyllum*, *Utricularia*, etc.

Soó, Dr R. Kritische Bernerkungen, iii., in Rep. Botanika Kozlemények, Band xxv., 133, 1928. It includes several varieties of *Ophrys* and *Orchis*. Under *Orchis incarnatus* he has f. *rhombeilabus* Reichb., f. *retusus*, f. *rostriformis*, f. *macrophyllus*, f. *stenophyllus*, f. *subfoliosus*, f. *brevicalcaratus*, and f. *albiflorus* Lec. & Lam., var. *ochroleucus* Boll. = *stramineus* Reichb., var. *extensus* Hartm. and *sublatifolius* A. & G. There are also many varieties under *latifolius* and *maculatus*, under which *helodes* is kept distinct as a sub-species.

Soó, Dr R. Orchideologische Mittelungen, i.-iii., in Fedde Rep., 273-280, 1929. Several new forms from the Ionian Isles. He supplies most valuable notes and descriptions of the genus *Ophrys*, which he divides into (1) Musciferae, (2) Fuciflorae, (3) Araneiferae, (4) Euaraneiferae Soó, (5) Sprunerianae Soó, (6) Apiferae, (7) Oestriferae Soó, (8) Euapiferae Soó and (9) Bombyliflora. A large number of new combinations are given.

Stansfield, F. W., M.D. Fern Gazette. Vol. vi., No. 1, December 1929. Contains an interesting note on *Cystopteris alpina* Desv. by F. W. Stansfield and S. P. Rowlands.

Thurston, E., C.I.E. The Alien and British Plants of Par and Charleston Harbour, Falmouth Docks, and Easter Green, Penzance. Journal of Royal Soc. Cornw., No. 76, pp. 137-206, 1928. Includes about 400 species and many varieties. Most, if not all of them, have been mentioned in our Reports and many of them are common constituents of our Flora. The noticeable ones include *Eschscholtzia crocea*

Benth., which in Ind. Kew. is reduced to *E. californica*; *Thlaspi perfoliata*, Falmouth; *Linaria Pelisseriana*, once seen at Par; *Orobanche reticulata* Wahl., Falmouth Docks, and *Dipsacus*. The *Festuca dumetorum* L. is probably different from the Skegness plant. Notes on the Cornish Flora, *l.c.*, 1929.

TORREY BOTANICAL CLUB, BULLETIN OF THE. Editor, Tracy Elliot Hazen. Some Juncus names, K. K. Mackenzie, p. 25. *J. tenuis* is referred to among the new plants. H. A. V. Gleason, Flora of South America, pp. 1, 97, 391. Albert Saeger, The Flowers of Lemnaceae, p. 351.

UKRAINE, BOTANICAL REVIEW. Vol. iv., 1928. Vol. v., 1929. The Ukranian Botanical Society. Includes the Flora Podoliens, G. D. Pleopow. Flora Letitschewsches Kreises auf Podolien. Material . . . flora de Longausk, N. Pidoplitshka.

WASHINGTON, UNITED STATES DEPARTMENT OF AGRICULTURE. The year 1929 shows no sign of diminution in the energy displayed by this great organisation. The Farmers' Bulletin, No. 1555. W. A. Taylor gives an account of Peppermint and Spearmint as farm-crops. The cultivation is centralised near Indiana, Michigan, Western Oregon, and Washington. About 32,000 acres are under *Mentha piperita* and 3300 under *M. spicata*. There are also smaller areas in the north-west Pacific. The industry was introduced more than a century ago in Wayne County. In the eighties, Hotchkiss oil of Peppermint was a keen rival of our English oil. Two varieties are grown—the black and the white mint. The former, imported from Britain, proved the better, and it is now almost exclusively grown. They prefer deep rich soil, well drained, but retentive of moisture, and experience shows that clay is unsuitable and a non-acid soil important. Rye is grown between the crops as a wind-break. Important cultural information is supplied as well as information about the stills. The yield of oil varies greatly according to the seasonal conditions, the characters of the crops, and the geographic location. In Michigan and Indiana thirty pounds per acre is a fair average, but in Oregon and Washington as much as 80 or 90 pounds have been obtained, the average bags about 50. This holds true of both Spearmint and Peppermint. The average price of Peppermint oil is $3 a pound. Next to the United States, Japan has the greatest output, but that is from a variety of *M. arvensis*, and the oil is used to prepare Menthol.

Circular 66. Cacti, by David Griffiths and C. H. Thompson. This has a splendid plate of *Opuntia brachyclata*. There are most useful details as to their cultivation. Many illustrations are supplied, including one of an avenue of *Lamairocereus stellatus* at Tomellin, Mexico. An account of their economic value is supplied, with reference to their uses as food. In Mexico, the fruit of the *Tuna* forms a considerable part of the diet of the poorer natives. In Britain they are now unpopular since formal and carpet-bedding are no longer fashionable. A list of the Cacti now in cultivation in the United States is appended. with an indication of their size.

Technical Bulletin, 96, gives the Yields of Barley in the United States and Canada, 1922-1926, by H. V. Harlay and others.

Department Bulletin, 1498. Distribution of the Classes and Varieties of Wheat in the United States, by J. Allen Clark and others, May 1929. The Wheat acreage in 1919 was 73,099,421 acres—a war time crop. In 1924 it had sunk to 50,862,230 harvested acres of wheat, and the average of recent years is about 58,000,000. The acreage and the wheat varieties grown are given in an exhaustive manner.

Leaflet No. 43. Wild Garlic and its Control. This is our *A. vineale* which is locally and generally abundant in cornfields in the Eastern States. "Reproducing as it does by hard-shelled bulbs, soft-shelled bulbs, aerial bulblets, and sometimes by seed, the plant is renewed practically continuously." Practical, though laborious, instructions are given to diminish the numbers of this agricultural pest.

The Farmers' Bulletin, No. 1602. Reed Canary Grass. This is our *Phalaris arundinacea* which is recommended as a pasture grass for rather swampy land. On the Pacific coast it may furnish pasture for nine months in the year. Its use for hay is increasing, as also for silage, which is a palatable and nutritious feed. The yield in seed is very variable, running from 30 to 150 pounds per acre. An average person will harvest from 20 to 40 pounds of seed per day, its average price being from $1 to $1.50 a pound.

The Farmers' Bulletin, No. 1591. Transplanting Trees and Shrubs, with many illustrations.

The Farmers' Bulletin, No. 1587. Mushroom Culture for Amateurs. With the disappearance of horses in Britain, the wild mushrooms are becoming increasingly scarce, and the Bulletin says "at the present time there is no substitute for horse manure on the market."

WATSON BOTANICAL EXCHANGE CLUB. Distributor, E. C. Wallace. Secretary, H. Stuart Thompson. The 45th Annual Report, 1929. In the year, 1942 specimens were distributed.

WHITE, GILBERT, FELLOWSHIP. President. Sir R. Gregory, D.Sc. Hon. Secretaries. Miss W. M. Dunton and Mr G. J. B. Fox. Annual subscription, 7/6.

WILD FLOWER MAGAZINE. This continues its triumphant career under Mrs Dent's guidance. We deeply sympathise with her in her long illness, and most sincerely hope she will soon be restored to health. We notice with special pleasure that Mrs Foggitt, née Gertrude Bacon, had a most acceptable wedding present in the shape of a very fine Halcyon portable wireless set, whose dulcet notes one had the pleasure of hearing at their charming residence at Thirsk last August. Miss Maud Robinson contributes a pleasing paper on the Joy of a Rubbish

Heap. One may note that in the June-July number Mrs Randall Mason is stated to have found *Crepis paludosa* in Berks. We can assure her that this is a mistake—the plant does not grow in that county. *Urtica pilulifera* is said to be flourishing like a weed at Ashridge Park from seeds brought from Rome in the seventies. Mrs M. E. Bunyard gives a note on Braunton Burrows.

WATSON, WILLIAM. Brambles of Kent and Surrey, 1928. Report in the London Naturalist, August 1929. A very useful paper treats of *Rubus silvaticus*, *myricae*, *hesperius*, *egregius* var. *plymensis*, *sciophilus* forma *microphylla*, *Nitidioides* nov. sp., *orthoclados*, *macrophyllus*, *Schlechtendalii*, *Macrophylloides*, *Questierii*, *Colemanni*, *Sprengelii*, and *scanicus*.

NEW ZEALAND INSTITUTE, TRANSACTIONS AND PROCEEDINGS OF. Vol. 59. Edited and published under the authority of the Board of Governors of the Institute. The botanical portion includes an able Revision of the Genus *Dracophyllum*, pp. 678-714, by W. R. B. Oliver, M.Sc., F.N.Z.Inst., Director of the Dominion Museum, Wellington, 21 species being figured. Vegetation of the Upper Bealey River Basin, with a list of the species, by R. M. Laing, pp. 715-730.

ZURICH, Der Botanische Garten und das Botanische Museum der Universitat, for the year 1928, by Dr Hans Schinz, 1929.

ZURICH, UNIVERSITAT. Rektoratsrede und Jahresbericht. April 1928, bis ende März, 1929, pp. 65. This contains an excellent portrait of Dr Albert Thellung, and a memoir by Dr Hans Schinz.

OBITUARIES.

Becker, Wilhelm, of Kirschmoser. Died October 12, 1928. Author of a Monograph of *Viola*.

Bennett, Arthur. Born at Croydon, June 19, 1843; died there, May 2, 1929. On May 2, when in London, finding that I had two hours to spare, I went to call on him at Croydon, and was shocked to find that my old friend had died only a few hours before, his death being due to heart failure after an attack of bronchitis. Thus British Botany lost one, if not its most, industrious worker. There seemed to be nothing in his forebears to account for his line of research. It is another example of the many mental idiosyncrasies which occur. He had in a high degree the love of work for its own sake. Just a century and a half before, George Don had shown the same power of concentrating on a life of toil and hardship and getting from it—as every real worker must—a reward in the discovery of new plants to his country. As I said when I unveiled a monument to his memory: "To those whose only standard of success is opulence, his life would be pronounced a failure; to those who love care and luxury, his career would be looked upon as insanely miserable; yet I doubt if the wealthiest millionaire ever derived as much satisfaction from the accumulation of his riches as Don experienced in finding a new species, or if the most self-indulgent individual ever obtained so exquisite a pleasure as Don enjoyed in those high alpine journeys where, in the purest air, among the tumbled fragments of the hills, with the sense of unutterable calm, only broken by the soft sound of distant streamlets' fall, or the plaintive notes of the Curlew and the Golden Plover, Don held his communing with Nature." So with Arthur Bennett. After leaving school, he went into his father's business of builder and house decorator, to which he eventually succeeded. There, in the hours he snatched from his business, he devoted himself to studying the flora of his country and entered upon a large correspondence to keep himself in touch with its development.

My own correspondence with him began in 1876 when I gave him the locality for *Senecio paludosus* in Norfolk, which a non-botanical friend of mine had discovered. Although out of place here, it may be worth while to put the find on record. A fellow-founder of the Northampton Natural History Society, Mr C. Jecks, who had some connection with Norfolk, was going to spend a month near Filby. His interests were Geological, but he asked if there were any plants from there that I would like. The fen ragworts and *Sonchus palustris* leapt to the eye, and I showed him *S. arvensis* and *Pulicaria*, saying I wanted something like these, explaining, as well as I could, the salient features of the wished-for plants. In the autumn I went to his Northampton house to see the results. There was a stack of "The Times," four feet high, filled with hundreds of yellow-flowered Composites, *Sonchus*, *Senecio*, *Bidens*, *Pulicaria*, of the common kind by hundreds, and, as luck would have it, two or three fragments of *paludosus*. He could not recollect where these were gathered, except that he was certain it must be near Filby Broad. So, not very hopefully, I went down to explore, and on the second day hit upon the place, where about a score of plants were growing magnificently on quaking ground which surged as one went on to it. Alas, the place became known, and the plants fell a prey. Bennett was delighted with this acquisition. In 1883 (*Journ. Bot.*, 246, 1883) he added a species new to Britain—*Naias marina* L., found on July 21, 1883. Bolton King and I independently found it in the early August of that year. But his first addition to the British Flora was made on September 23, 1880 (*Journ. Bot.*, 319, 1880) in the plant now known as *Nitellopsis obtusa*, also from the Norfolk Broads. Norfolk and Suffolk were favourite counties of his, and on them he made some valuable comital notes. The Pondweeds gradually became his chief love, and on this genus he was the foremost authority. Not only had he a thorough knowledge of the British species but he had the advantage of seeing the Kew specimens, and his assistance to that Institution in giving valuable aid is acknowledged by Sir Joseph Hooker (*Fl. Brit. India*, vi., 565). His help, too, is acknowledged in the *Flora Capensis*, vii., 1897; the *Flora of Tropical Africa*, viii., 1901; and in the Student's Flora, where Hooker alludes to his unrivalled knowledge. He also determined the Pondweeds for the British Museum, and those of the Dillenian Herbarium. To the *Journal of Botany* he was a copious correspondent, contributing 243 notes, papers, and reviews. Only in one year out of 53 did he fail to send some note.

He was fortunate in adding *P. lanceolatus* Sm. from Burwell Fen, Cambridgeshire. This, like the Anglesey plant, is now admitted to be a hybrid, but Hagström doubted if the Burwell and Clare plants had the same parents as the plant from Anglesey, and as *coloratus* occurs both in Cambridgeshire and Clare it indeed seems probable that these two plants are *coloratus* × *pusillus*. Bennett, however, did not agree to this origin of the Burwell plant. Bennett named a pondweed which J. Griffith found in Llyn yr Afon, above Aber, as a new species, *P. Griffithii*. This was one of the plants which Fryer could not obtain, so I went to the lake and, with much discomfort, gathered rooting specimens. I could only see *oblongus* growing there, so no support has yet been found to support Hagström's and Graebner's view that it is × *nerviger*—an identification strongly opposed by Bennett. This alpine lake should be well explored. Bennett also identified *P. alpinus* × *lucens* = *P. upsaliensis* from Bindon, Dorset (*Journ. Bot.*, 306, 1916), *P. oblongus* × *praelongus* = *P. Macvicarii* (*Ann. Scot. Nat. Hist.*, 106, 1907), *P. lucens* × *praelongus* = *P. Babingtonii*, × *P. decipiens*, var. *affinis* and var. *salicifolius*, × *P. undulatus* Wolfg., *P. mucronatus* × *obtusifolius* = *P. semifructus*, *P. pusillus*, var. *similis*, and *P. Sturrockii* Ar. Benn. (Hagström thinks the Scottish *Sturrockii* is *obtusifolius* × *panormitanus*). These are only pickings from a great mass of work.

A new star had risen in the East—Alfred Fryer, a man with an extremely different mentality from Bennett. Knowing the fenlands intimately, he worked assiduously at the Pondweeds, and described with great detail the *P. gramineus* section, naming *P. Drucei*, *P. falcatus*, *P. crassifolius*, *P. varians*, etc. He also began a Monograph of the British Pondweeds, with beautiful plates of the various species in colour. Unfortunately, when about a third of it had been published, he died. This gave rise to a long delay. Eventually Dr A. E. Evans completed a second part (pp. 57-76) which Fryer had in unfinished MS., the grass-leaved section being untouched. This Arthur Bennett described in eight species (pp. 77-91). I am bound to say that this part, when completed, a little disappointed me. One missed the minute and vivid descriptions of Fryer, and one felt that Bennett had not done himself justice, as he had not taken sufficient toll of his great stock of knowledge. This, he explained to me, was partly caused by the hurry in which it had to be written. One could have wished also to see a more minute account of the distribution of the plants throughout the British Isles. For instance, instead of Anglesey being given for *P. rutilus*, its more precise habitat, Llyn Coron, should have been added.

The Carices, too, were a favourite genus, but with these he was not so successful. Four at least are misnomers, *C. Elytroides* (*Journ. Bot.*, 117, 1889), *C. trinervis* (*Journ. Bot.*, 125, 1884), *C. ligerica* (*Journ. Bot.*, 244, 1897), *C. caespitosa* (*Journ. Bot.*, 259, 1897). However, he detected *C. helvola* Blytt in Balfour's Herbarium (*Journ. Bot.*, 149, 1886). *C. salina* Wahl. and × *C. Grantii* were also named by him.

Bennett was a good letter writer, and he had a wide range of correspondents scattered over Britain. They sent him myriads of specimens. By casting his net thus widely on the waters, its meshes retained many fishes, which he was able to identify, otherwise they would have been sailing unknown amid the waters. Thus came *Potamogeton Griffithii* and many Scottish specimens from Grant, Macvicar, Duncan, Sturrock, and Knox.

My own correspondence, beginning in 1876, continued to within a week or so of his death. Years ago Miss Palmer and I found a Pondweed in the canal at Odiham which seemed different from *P. alpinus*. I thought *P. praelongus* was the cause. It appeared in my List as ? × *Palmeri*. Bennett, in those early days, said he would only name it *alpinus*, but almost the last letter I had from him he advised me to name it var. *Palmeri*. We did not always agree on nomenclature. He belonged to the school of Buchenau which, ignoring priority, chose the first name which unmistakably described the species. So Bennett would never adopt *P. gramineus* for *P. heterophyllus* or *P. compressus* for *P. zosterifolius*. To "The Scottish Naturalist," "The Annals of Scottish Natural History," the short-lived "Scottish Botanical Review," and the "Transactions of the Botanical Society of Edinburgh," he was a most prolific and valued contributor. A list of the chief papers to the first three mentioned is appended. His favourite areas were Caithness and the Ebudes, and for some years he kept the specimens from the latter area separate from his general herbarium. Grant of Caithness and Duncan of Scarp sent him many things. A sedge from Harris was named by him × *C. spiculosa*, var. *hebridensis*. The objection to the determination was that *salina* (one of the parents of *spiculosa*) was not known for the West of Scotland. I made a prolonged but vain search for it last year. *Salina* is a littoral sedge or grows by brackish water. The habitat, whence *spiculosa* came, was about 300 feet above Langavat, itself a fresh-water loch, not near the sea.

Bennett was a valued expert and helper to our Club, which he joined in 1875. He was one of our four corresponding members, and had he lived he would have been made an honorary member. The large pile of letters before me is an evidence of his industrious help. He said that he always liked to put one interesting point in each letter.

Despite much domestic trouble (his daughter suffering from mental disorder and he himself being at one time in very straitened circumstances), he was cheerfully and kindly disposed. I am glad to say that our members very gladly responded to an appeal I issued, and we were able to hand him a substantial sum which helped him in a time of dire need. He was a Fellow of, and a frequent attendant at, the Linnean Society, and in 1910 was made an A.L.S.

He assisted Paul Graebner in preparing the Pondweeds for the "Synopsis der Mitteleuropaischen Flora," who says, p. 537, "dem vorzuglichen Kenner der Britishchen Flora und vor Allem der gattung Potamogeton (Vgl. S. 456) Wir sind demselben für manche freundlich ertheilte Aufschlüsse verpflichtet auch Graebner wurde bei seiner Bearbeitung der Familie in Engler's Pflanzenreich (iv., 11) von ihm aufs Thatkräftigeste unterstutzt," and he was also responsible for the Pondweed List in two or three Editions of "The London Catalogue."

He was certainly one of the great amateur botanists of his time as is testified in the prefaces of so many Floras to which he had given help. His British Pondweeds are left to the British Museum, his foreign ones to Kew, while the rest of his herbarium went to C. E. Salmon (where I saw part of it only recently). Owing to Salmon's death that will now go to Cromwell Road. Fryer named × *P. Bennettii* = *obtusifolius* × *pusillus*, a rare hybrid, in his honour.

Arthur Bennett, who was greatly interested in the comital distribution of plants, prepared a Supplement to Watson's "Topographical Botany." This appeared in the "Journal of Botany" for 1905. It was neither well arranged, nor were the citations uniform, or, indeed, in many cases correct. For instance, Newbould is cited for hundreds of county records for counties he had never been in. The majority of these were my findings which I handed to Newbould for insertion (as mine) in a new edition of "Top. Bot." But the Supplement contains an immense amount of detailed work. There are many hundreds of records which Bennett had culled from various sources, many being actually sent in to him as vouchers by his numerous correspondents. In 1929 a second Supplement, in the preparation of which he was aided by C. E. Salmon and J. R. Matthews, began to appear. This contains a large number of additional records, some, however, being duplicated, while others do not show whether they are real additions or merely vouchers for a record without personal authority. It is not generally understood that these blank records in "Top. Bot." are in the main taken from printed works, and although of an older date, are not less trustworthy. To give a concrete case, Sibthorp wrote a "Flora of Oxfordshire" in 1794. Watson did not take this as evidence for Oxford, but preferred a marked catalogue by Thomas Beesley, which had no greater claim to accuracy. Indeed, Beesley marked *Ranunculus hirsutus* but, as I afterwards found, it was a hairy form of *repens*, while his *Chenopodium urbicum* was an *Atriplex*. *Teucrium Scordium* is left blank, but the authority should rest on Sibthorp's accurate record. I need not point out the uncertainties respecting these marked catalogues. Those for Flint and Carnarvon have been very adversely criticised. However, the things that stand clearly out are the impetus Bennett gave to other workers and his own unwearying industry in his subject.

As a writer he had a confused style, and too often overloaded the point with irrelevancies. But, again, that was more than compensated for by the intense pains he took to help his correspondents and to bring forward any possible information bearing upon the point at issue.

A few extracts from his correspondence are appended:—

May 5, 1888.—I have not sent you back yet the rest of that *C. flava* f. (this he afterwards named × *C. Marshalli*). It is certainly a curious var. which perhaps needs a name, but I want first to look through all the European and American forms of it. I object most decidedly to the use of *Buda* and *Tissa*, instead of *Lepigonum*. Adanson did not know that both his genera could be found on one plant, or he would not have published them. And why *Buda*? because Dumortier has it—to me a reason absolutely without reason to induce one to accept it. I have written Britten a note. I did mean to keep out of this naming business, but this is so outrageous I could not but explode. I object to *Myosotis Scorpioides* L. being used for any of the same species. It may be divided ? into . . . it becomes an aggregate species, and all its parts should have the earliest name they were put under as a segregate.

September 25, 1891.—I have retained one specimen, a "*Sagina*." I am quite in doubt what it is . . . it is very interesting. I cannot make anything of it except it be *S. maritima*, var. *alpina*. I have never seen a specimen of it before. If so it be, and what else is difficult to say—certainly not *nivalis* [this was my Glen Avon plant, now standing in the "List" as *S. procumbens*, var. *Druceana* F. N. Williams, on which the last word has not been said].

August 10, 1900.—Salmon and I have been in Norfolk for a fortnight. *Liparis* in two places, thousands of *Lastrea cristata*, *L. uliginosa* very sparingly, acres of *Lychnothamnus stelliger*. *Naias* is now protected—it is in two stations. *Senecio palustris*—at neither of the stations are there any specimens. A rascal three years ago took 20-40 roots in full flower; if he tries again he will have a warm welcome . . .

We saw a lot of interesting things—*Daphne Mezereum* in beautiful fruit, and the caterpillars of the Swallow-tail were abundant.

September 15, 1909.—Many thanks for your kind letter with enclosure [this was the amount the members gave in answer to my appeal], only this idea of a Testimonial makes it exceedingly difficult to reply to your letter. I do not see what I have done to deserve it. Only what dozens of others have done . . . but don't think I do not feel deeply the kindness, for I do. Trouble and worry take the grit out of me.

PAPERS IN SCOTTISH NATURALIST.

1885.—*Carex salina*, found by Grant beside the Wick River, p. 26. *Calamagrostis lanceolata* sent by J. McAndrew from Kenmore Holms, Kirkcudbright, and *Allium carinatum* from Kirkcudbright coast, opposite St Mary Isle, by Mr F. R. Coles, p. 26. Plants of Iceland and the Faroes not known as British, pp. 65 and 116. *Carex salina*, var. *kattegatensis*, sent by Grant in 1883, first named by Bennett *C. paludosa*, var. *Kochiana*, afterwards corrected to above, p. 68. New Scottish Flowering Plants, p. 180. Include *Calamagrostis strigosa* (this was so named by Mr N. E. Brown, but Hackel referred it to a form of *C. stricta* and Druce names it *scotica*) and *C. elongata* from J. McAndrew from Kenmore Holmes, Kirkcudbright.

1886.—Forms of *Carex* New to Scotland, p. 268. Include *C. rigida*, var. *inferalpina* Laest. from the Little Culrannoch, F. J. Hanbury; *C. aquatilis*, var. *cuspidata* Laest., Wick River, var. *epigeios* Laest. and var. *virescens* And. (the two last sent by F. B. White from Perthshire), and *C. helvola* Blytt. found by Balfour on Lochnagar in 1846, and named by him *C. curta*, var. *alpicola*. Additional Records of Plants from Scotland, pp. 279, 309. These are plants either recorded by their finders or sent to Bennett. It may be said that he never visited Scotland. *Cerastium latifolium* auct. ang., p. 351. Bennett suggests that it is *arcticum* Lange, but it is the *C. nigrescens* Edmondst.

1887.—Additional Records of Scotch Plants for the year 1886, p. 56. Suggests that *Ranunculus Confervoides* from Angus is wrongly named. Notes on *Nuphar pumilum* and *intermedium*, as named by Dr Caspary, p. 106. The Ellesmere, Salop; Loch Kinnord, Aberdeen; and Loch in Aviemore plants are *pumilum*. The plant from Sanquhar, Dumfries, is named *luteum* × *pumilum* = *intermedium* by Dr Caspary.

1888.—*Arabis alpina*, found by Mr Hart, in Skye, p. 181. See *Journ. Bot.*, 247, 1887. *Juncus tenuis* found in Kirkcudbright by J. McAndrew, p. 181. Additional Records of Scottish Plants for the year 1887, p. 247. A very large proportion had been already recorded in the "Report of the Botanical Record Club" by myself. Contributions towards a Flora of Caithness, a joint paper with J. F. Grant, pp. 305, 357.

1889.—Flora of Caithness continued, pp. 39, 77. His *Orchis latifolia* is mostly *praetermissa*, its hybrids and varieties. *Festuca duriuscula* is said to be frequent, but this is not probable. *Nitella batrachosperma*, found near Obbe, in Harris, by Mr Duncan, p. 191.

1890.—Records of Scottish Plants for 1889, p. 263.

1891.—Records of Scottish Plants for 1890, pp. 85, 137, and 185.

PAPERS IN ANNALS OF SCOTTISH NATURAL HISTORY.

1892.—Contributions towards a Flora of the Outer Hebrides, from plants found mainly by Duncan and Somerville, p. 56. Records of Scottish Plants, p. 119. *Linaria minor* on Railway Banks, p. 204. Flora of Caithness (continued), p. 247.

1893.—*Ranunculus petiolaris* Marshall, sent by S. M. Macvicar from Moidart, with *Subularia*, p. 52. *Caltha palustris* and its forms, p. 52. Records of Scottish Plants for 1892, p. 95. Include *Orobanche cruenta* from Argyle, but the plant is not correctly identified. Notes on *Alchemilla alpina* and *A. conjuncta*, p. 122. Flora of East Sutherland, p. 225. *Juniperus intermedia*, found by Duncan in the Isle of Scarp, p. 250.

1894.—Flora of East Sutherland (continued), p. 25. Records of Scottish Plants for 1893, p. 158. *Chrysosplenium oppositifolium* in the Outer Hebrides, found by Duncan, p. 186. *Linnaea borealis*, found by Dr Joass in E. Sutherland, p. 186.

1895.—Records of Scottish Plants for 1894, p. 114. Flora of the Outer Hebrides (continued), p. 240. *Carex fusca*, found in Arisaig by W. F. Miller, p. 247.

1896.—*Elatine hexandra* in Glen Laxadale, N. Harris, with *Subularia*, found by Duncan, p. 63. Notes on London Catalogue, p. 107. Records of Scottish Plants for 1895, p. 113. Notes on Scott-Elliot's "Flora of Dumfriesshire," p. 246.

1897.—*Juncus tenuis* in Westerness, found by Grant, p. 32. *Lathyrus palustris*—no specimens from Scotland in Mackay's Herbarium, p. 51. *Carex magellanica*—corrects Dr Shoolbred's record of this from Harris; the specimen being *limosa*, p. 188. Records of Scottish Plants for 1896, p. 246.

1898.—Records of Scottish Plants for 1897, p. 225.

1899.—Records of Scottish Plants for 1898, p. 92. *Atriplex calotheca* is not correctly identified, p. 119. Scottish forms of *Juncus*, p. 119. *Carex curta*, var. *dubia*, p. 187. *Hierochloe borealis*, found by Miss Mittelbach in Kirkcudbright, p. 230.

1900.—Flora of Caithness (continued), p. 108. Records of Scottish Plants for 1899, p. 159. Euphrasias from Stroma, p. 187.

1901.—Records of Scottish Plants for 1900, p. 100. Notes on West Ross Plants, p. 107. *Sagina caespitosa*, p. 242. *Peucedanum palustre* in Scotland, p. 243.

1902.—Records of Scottish Plants for 1901, pp. 32 and 102.

1903.—*Equisetum hyemale* in Westerness, p. 47. *Utricularia ochroleuca*, p. 123.

1904.—*Juncus trifidus* in North Harris, gathered by Duncan, p. 195. Flora of Caithness (continued), p. 224. *Ajuga pyramidalis* as a Scottish species, p. 240. *Vaccinium intermedium*, found by Mr A. Sutherland at Scarmclet (not Sconilett) Braes, Caithness, p. 249. *Carex riparia* in Caithness, found by Mr Doull, p. 250.

1905.—Flora of Caithness (continued), p. 36. *Anthoxanthum Puelii*, from summit of Ben Aan, gathered by Gardiner in 1844, identified by F. Townsend (but it should be checked), and is not probable, p. 58. *Potamogeton falcatus* in Ardblair Loch, E. Perth, A. Sturrock, p. 123. Flora of Outer Hebrides (continued), p. 164. Records of Scottish Plants, p. 235.

1906.—*Lamium purpureum*, var. *decipiens*, p. 119. *Alchemilla alpina* and *conjuncta*, p. 121. Additional Scottish Records, p. 170.

1907.—*Butomus umbellatus*, found by Mr Bain on the north side of the Wick River a good many years ago (the specimen proved to be *Alisma Plantago*), p. 103. *Potamogeton undulatus* Wolfg., Kildean, River Forth, near Stirling, found by Mr Kidston (as *praelongus*), 1894, = *praelongus* × *crispus*, p. 104. × *P. Macvicarii* Ar. Benn. (*praelongus* × *polygonifolius*). Loch-na-Craig-dhui, Ardnamurchan, and Loch Dow, Moidart. The first loch discharges its waters by the Allt Eas-an-Taileia into Kentra Bay. Found by Macvicar, p. 106. The Plants of the Flannan Isles found by Eagle Clarke, p. 187.

1908.—*Juncus balticus*, p. 36. *Calamagrostis strigosa*, p. 124. The plant is not caespitose nor is it *strigosa*. Additions to the Flora of Orkney, from specimens gathered by Mr M. Spence, p. 169. Records of Scottish Plants, p. 251.

1909.—Plants of the Faroe Isles, not occurring in Britain, p. 36. *Nasturtium palustre* in Orkney, ex Mr M. Spence, p. 53. *Crithmum maritimum*, found by Gibson on Mangursta Cliff near Stornoway, p. 55. *Limosella*, sent by Watt from a dam at Duntocher, nine miles from Glasgow, p. 55. *Carex atrofusca* in Perthshire, p. 55. *Saxifraga caespitosa* in Scotland, p. 174.

1910.—Notes on the Review of Kükenthal's *Carex*, p. 111. This is not a satisfactory paper. Flora of the Outer Hebrides (continued), pp. 165, 229. His *C. Bremii* is not correctly named. Mr Duncan supplies a valuable note on the Scarp Orchids, but his *latifolia* is *praetermissa* and its forms and hybrids. Flora of Caithness (continued), p. 225. *Carex aquatilis*, var. *rigida* nov. var., from the banks of the Nith, Sanquhar, Dumfries, Dr Davidson, and Kenmore Holms, New Galloway, J. McAndrew, p. 236. *Alisma Plantago* in Caithness, p. 252. This is the plant recorded in error as *Butomus* on p. 103, 1907.

1911.—Flora of Caithness (continued), p. 44. *Vicia Orobus*, p. 104, a gracile form at Dalmeny. *Vicia sylvatica*, var. *condensata* Druce, in Kincardine, gathered by A. Somerville on shore-rubble north of Johnshaven. A remarkable form of *Carex aquatilis* found by George West in Inchnacardoch Bay, Loch Ness, a rhizome weighed 70 pounds, p. 121 Notes on *Callitriche*, p. 121. Notes on the Genus *Potamogeton* of "The London Catalogue," ed. 10, p. 180. The var. *Richardsonii* of *perfoliatus* from a mill-dam, Selkirk, is wrongly identified. *Pyrola uniflora* from Bernera in Hb. Smith, gathered in 1783 by James Hogg, p. 185. *Valeriana dioica* in the Isle of Scarp, found by Duncan, p. 186. Distribution of *Goodyera repens*, p. 242. *Hierochloe*, p. 252. *Stellaria palustris*, p 253.

PAPERS IN SCOTTISH BOTANICAL REVIEW, 1912.

Aquatic Forms and Species of the British Flora, p. 17. *Carex helvola*, p. 41. *Potamogeton praelongus* from Orkney, sent by Mr Spence, p. 47. *Juncus alpinus.* Notes on Mr West's record from the sandy bays of Loch Grennoch, by Cairnsmore of Fleet, at 690 feet above sea-level, p. 47. Scottish Forms of *Sparganium*, p. 94. Recent Additions to Caithness Flora, p. 181. *Saxifraga Hirculus*, Caithness, found by G. Lillie in a floating bog between Lybster and Loch Rhuard, alt. 430 feet, about 1½ miles from the Loch, p. 205. *S. Aizoides* in Orkney, sent by M. Spence, p. 235. *Utricularia vulgaris* from Loch Watten, Caithness, specimens gathered by Mr Lillie, p. 235. The plants, however, were flowerless.

COULTER, JOHN MERLE. Born at Ningpo, China, on November 20, 1851; died at Yonkers, New York, December 23, 1928. Appointed Professor of Botany at Chicago, 1896, he was really a great teacher. For 50 years he edited the "Botanical Gazette" with C. J. Chamberlain. His text-books on the Morphology of Angiosperms and Gymnosperms were deservedly popular. Many of his Rocky Mountain plants are at Oxford. He was the friend and pupil of Asa Gray, and with Watson produced the sixth edition of Asa Gray's "Manual." With J. N. Rose (recently also lost to us), he issued in 1900 the "Synopsis of the Mexican and Central American Umbelliferae." He had a full share of honours, and deserved them all. See *Trans. Linn. Soc.*, 141, 1929.

ELLMAN, Rev. E. Born at Berwick, Suffolk, 1854; died at Bath, January 30, 1929. He was educated at St John's College, Oxford, was ordained, and did clerical work in Cornwall, Kent and Sussex, to which counties he added much botanical knowledge. Always in delicate health, in later years he greatly suffered from asthma. While at Oxford he discovered *Sonchus palustris.* Subsequently I went with him to corroborate the find, but he was unable to locate the place. Years after it was found by the Rev. H. J. Riddelsdell, and then I saw how Ellman had mistaken the path. When we were within 150 yards of it he had taken a wrong direction. He was a curious type, shy, and so hating publicity that he never published the results of any of his work, though he had explored very largely in the South of Europe and North Africa, M. Emile Jahandiez being a frequent companion. He also accompanied White and Bucknall in a South European tour. In more recent times Noel Sandwith accompanied him on his last visit to Cabo de Gata, S.E. of Almeria, Alicante, Denia, etc. His 3000 gatherings, made in Spain, Pyrenees, and Switzerland have been given to Kew. He was entirely careless of his personal appearance. The clothes he wore were sometimes and something disreputable, but he was a gentleman underneath the uncleanly garb. His cheeriness and kindliness were pass-words to a brotherliness which stood him in good stead in his wanderings. On these Spanish journeys, C. E. Hubbard and N. E. Sandwith published in his honour in Kew Bulletin, 150, 1928, *Teucrium Ellmanii* from limestone mountains near the sea west of Almeria, and *Juncus Ellmanii* from moist places on slopes of the Cerro de los Avantos at 1350 m. and from other places. The rush had previously been confused with *J. squarrosus*.

FORTESCUE, EMILY ORMSBY GORE, COUNTESS FORTESCUE. Born 1859; died at Castle Hill, Devon, 1929. She married in 1886 Lord Ebrington, who was then Master of the Devon and Somerset Staghounds. There, in Devon, her great charm made her very popular. When, in 1904, her husband became Lord-Lieutenant of Devon, she at once began a great work of social service. She founded in that year the Devon Nursing Association, and under her wise supervision, it may now be said that in all the large area of that glorious county she has made it still more splendid by providing that hardly a child is born without the ministrations of skilled nurses. In 1905 her husband succeeded to the Earldom, and that step still further added to her responsibilities. So in 1907, while he carried out Mr Haldane's scheme for the Territorial Forces, Lady Fortescue started the Devon branch of the Red Cross Society and other work. In 1913, Queen Mary appointed her to be a Lady of the Bedchamber, and at Court she was not only very popular but very useful, her knowledge of German standing her in good stead. About this time—she was always interested in Botany—she introduced me to the instructress of H.R.H. Princess Mary, M. Dussau, and several excursions were made in the neighbourhood of Windsor. At that time the Princess was interested in wild flowers and, if I remember rightly, found *Galinsoga* in the gardens of Buckingham Palace. I was also able to show Lady Fortescue the rarities of the Jersey Flora, including *Orchis laxiflora*. At their beautiful house of Castle Hill, where I made the acquaintance of Mr Trethewy, Braunton Burrows was explored, and Lady Fortescue showed me several stations for *Geranium versicolor*, as well as *Cochlearia* in inland situations. We drove to Lady Stukeley's delightful garden near Clovelly, and saw masses of *Scilla verna* and the naturalised *Libertia formosa*. Then I had the pleasure of showing her masses of *Lilium pyrenaicum* at Mollond. Lady Fortescue's early days were spent at Chilton in Buckinghamshire, which commands a very fine view of the vale of Aylesbury, so there was another bond of interest. Her work during the war was splendid, and she had the joy of seeing both her sons back unscathed. In 1922, when driving in a pony carriage, she was upset and thrown upon her head, but with her boundless courage she made light of her injury. However, she never was the same again, and had to give up the Court appointment. Her after years were a constant battle against bodily pain.

GOULDING, RICHARD WILLIAM. Born at Louth, Lincolnshire, November 23, 1868; died there, November 9, 1929. Our member was Librarian and Private Secretary at Welbeck Abbey, a distinguished antiquary, and the author of authoritative works on portraits, miniatures, historic manuscripts, mediaeval local history, obscure biography, and kindred subjects. His life was one of profound and continuous labour, and while his botanical activities cannot be described as leisure time pursuits, they certainly tended to brighten the occasional hours of freedom which he allowed himself. In the early eighties, while at Louth Grammar School, he made collections of Lepidoptera and Coleoptera. By so doing he not only obtained two of the prizes which were then awarded for such collections but acquired interests in natural history which endured to the end. Before long these interests included botany, and that his delights in the wild-flowers and later in the adventive plants which at Welbeck sprang up in quantity were equally enduring is evident from our Reports (1928 included), which have contained many records of his gatherings. Among his numerous pamphlets are memoirs of Martin Lister (whom *Listera* commemorates) and of Sir Richard Kaye (whose note-books in the British Museum were found to contain lists of plants observed by him at Welbeck in 1777 and Kirkby in 1774), a notable person, as Dr Druce said, whose acquaintance with botany was practically unknown to most of us. In other pamphlets Goulding wrote of early Louth botanists:—(1) John Bogg (b. 1799), who was "so far as we know the first native of Louth who made a collection of the wild-flowers of the district;" (2) Thomas Wemyss Bogg, who supplied H. C. Watson with a "London Catalogue" checked for plants seen within ten miles of the town; (3) John Theodore Barker, author of "The Beauty of Flowers in Field and Wood," whose Louth classes during the fifties made botanists of the grandfathers of the present generation. Of the Lincolnshire Naturalists' Union and of the Louth Antiquarian, Naturalists' and Literary Society, Goulding was among the founders, the Louth Society having been instituted in 1884 by him and four other boys. He diligently served the Union and the Society as one of the joint Secretaries during more than thirty years, and with equal diligence he continuously placed both time and ability at the disposal of others. Of his gentle, considerate, and unchanging personality, it must suffice to say that he inspired both esteem and admiration, that he was deeply loved, and that he was capable in the highest degree of close and lasting friendship.—H. W. KEW.

One cannot refrain from adding an expression of great regret at the loss of so esteemed a member, and of so kindly and frequent a correspondent. He had a quick eye for spotting a variant, and many plants were added to his area by his industrious zeal. The "Louth and Lincolnshire Advertiser" had a long tribute to his memory, and more than a third of a column of a list of his published works. These chiefly related to local county history. In late years he had been the valued private secretary to the Duke of Portland, who was one of the many people who attended his funeral. In his researches into the documents at Welbeck, he came upon a pamphlet autographed by Elia—Charles Lamb. Quite recently he was elected a Fellow of the Society of Antiquaries.

A recent letter is appended:—Dear Dr Druce—I congratulate you most heartily on the new issue of your *Report*. As far as I can judge from a mere hasty glance it seems to me better than ever, and the section on the descriptions and illustrations of the Rubi is quite remarkable and valuable. All who are interested in Wild Flowers are greatly in your debt.

A correspondent of "The Times" writes:—Mr Richard Goulding, whose death has been briefly noticed in "The Times," was librarian and private secretary to the Duke of Portland, and deserves more than a passing reference. He contributed to the eighth volume of the Walpole Society (1919-20) a long and exhaustive paper, elaborately illustrated, on "Wriothesley Portraits," a work to which he must have devoted many years. The essay is in every way admirable, is full of historical knowledge and permeated with judicial critical acumen concerning the portraits discussed. The essay was the outcome of his study of certain portraits at Welbeck that were formerly at Titchfield House, the family mansion of the Duke's ancestors, the Wriothesleys, Earls of Southampton. The monograph has a much greater than a family interest, seeing that it includes the third Earl of Southampton, who, in Macaulay's words, was "that accomplished nobleman, who will be remembered to the latest ages as the generous and discerning patron of Shakespeare."

HARSHBERGER, JOHN W., Ph.D. Born in Philadelphia, January 1869; died 1929. In September 1888, he entered the University at Philadelphia, graduating B.Sc. in 1890. He began a herbarium when he was seven. He became a successful lecturer and a ready helper in any educational work, and had through his hands many of the leading botanists of America. His chief work was "Phytogeographic Survey of North America"—including Mexico, Central America, and the West Indies, together with the Evolution of North American Plant Distribution, a book of 790 pages. He was made an Honorary Member of Societas for Fauna et Flora Fennica in 1923. His Life and Work, an autobiography, appeared in 1928.

HARVEY-GIBSON, Prof. R. J. Born in 1860; died in June 1929. Educated at Aberdeen as a pupil of Professor Trail, Edinburgh and Strasburg, in 1883 he was made demonstrator in biology in the old school of Medicine at Liverpool, which was later amalgamated with University College, and became the foundation of the present University. His energy in this work led to an establishment of a Department of Botany in 1889, his first assistant being Dr A. J. Hewart. Through the generosity of Mr Holebrook Gaskell, a chair of Botany was founded, and Harvey-Gibson was its first holder. He contributed to the "Annals of Botany" papers on the anatomy of the genus *Selaginella*. For a short time he was a colleague of mine as an examiner in Botany of the Pharmaceutical Society. Among his pupils at Liverpool was Dr J. C. Willis. His chief works of interest to us are the completion of Reynolds Green's "History of Botany" (see *Rep. B.E.C.*, 46, 1914), and his "Outlines of the History of Botany," which I reviewed in *Rep. B.E.C.*, 594, 1919. In it he sharply reproves Sachs for his unfair treatment of Theophrastus, and for his statement that Linnaeus showed an utter incapacity of careful observation of any object difficult to observe. Harvey-Gibson defends

Lindley against the savage expression of Sachs "that his Vegetable Kingdom is one of the most unfortunate classifications ever attempted." He had no hesitation in prophesying that in years to come botanists will regard Engler's system as having done as much to retard the true phylogenetic classification of Angiosperms as Linnaeus' sexual system retarded a natural classification. During the war he served as Colonel in the Territorial Army, was made C.B.E. in 1919, and was a D.L. and J.P. for the County Palatine.

Buchan-Hepburn, Sir Archibald, of Smeaton-Hepburn, Co. Haddington, East Lothian. Born 1852; died 1929, after an operation, at the age of 77. The second son of the third Baronet, he was educated at Glenalmond and Trinity College, Cambridge, and was called to the bar by the Inner Temple in 1877, joining the South-eastern Circuit. He succeeded his father in 1883, his elder brother having been killed by a party of miners in Mexico ten years before. Sir Archibald was a J.P. and Deputy-Lieutenant for Co. Haddington, and Chairman of the County Council. His wife died in 1923, and he is survived by two sons, of whom the elder, John Karslake Buchan-Hepburn, succeeds to the Baronetcy, and one daughter. The eldest son, Captain T. E. A. Buchan-Hepburn, died in 1923. He grew the magnificent *Orchis foliosa* of Madeira in his garden, and this hybridised with the showy hybrid, *O. maculata* × (*latifolia*) *praetermissa*, which I named (*Rep. B.E.C.*, 211, 1915) as ×*O. Hepburnii*.

Jhalawar, The Maharajah Rana. Born 1874; died April 13, 1929. Educated at Mayo College, Almore, he first visited Europe in 1912. One day, as I was coming out of the Botanic Garden, I saw a couple of Indians looking at the old Gateway. They asked some questions and it resulted in my showing them the treasures of the Library—the wonderful paintings of Bauer for the "Flora Graeca," the historic copy of Dioscorides, the Hortus Siccus of Gregory of Reggio, and the plants sent back to Du Bois from India in 1690. It was not till we were coming away that I found that the Indian was the Raj Rana of Jhalawar. He had been most intelligently interested in our historic relics. Thus began—allowing for the difference in our social position—an acquaintance which ripened into a real friendship. I went up to his great fete in London, when it was a little embarrassing, in saying good-bye, to have one's pocket-handkerchief sprinkled with otto of roses. An illness prevented my going out to Rajputana for the winter as His Highness's guest. That year he visited Cambridge where he was entertained at Newnham. He became a Life Member of our Society, but it was mainly the exact sciences that interested him—meteorology, aeronautics and education being his favourite subjects. At the British Association Meeting at Cardiff, His Highness was a prominent feature, and we had much conversation about his son, whom I strongly recommended should come to Oxford. In 1920 the Maharajah came to Oxford and took a house near to me, where his son, Prince Kumar Rajendra Singh, also lived.

His heir had recently married the daughter of the Maharajah of Vizianagram, and he joined Christ Church while the Maharajah himself went as a research student into New College. He was greatly interested in general literature, in the arts and drama. He had the good fortune to become a grandfather during his residence, a son being born to his son, Prince Kumar—I suppose a unique instance of the heir to an Indian Prince being born in Britain. I remember being present on the State occasion of the tiny child being shown, the half-frightened, but wholly proud little Princess, his mother, being present on that occasion. About that period, I gave a luncheon to the City Council on my relinquishing the chairmanship of the Sanitary Committee after a quarter of a century's service. As the Maharajah had a long settled engagement for that day, he was not present, but sent Prince Kumar to represent him. At that time there was a little pressure put upon him to study botany but, beyond purchasing a drying press, I am afraid the flowers of the field did not suffer from his efforts. The Maharajah was extremely kind and helped in many projects. His own State is a witness to that. There, among other things, he built a Public Library (his own was a singularly good one), Schools and Literary Institutes, and his death at so early an age, which occurred on s.s. Ranpura, two hours after the ship left Bombay, is a great loss to his State and to Britain.

MELVILL, Dr JAMES COSMO. Born July 1, 1845; died at Meole Brace Hall, Shrewsbury, November 4, 1929. He was the son of James Cosmo Melvill, Under Secretary of State for India, and grandson of Sir James Cosmo Melvill, F.R.S., chief Secretary of the East India Company. Educated at Harrow, to which he has given a British Herbarium, in 1864, in conjunction with Hon. F. C. and G. O. M. Bridgman, he prepared a "Flora of Harrow." A second edition, edited by the Rev. William Hind, appeared in 1897. On leaving Cambridge he entered the business of his uncle, Edward Hardcastle, and travelled much in North America. Later he joined the firm of Messrs G. & B. Dewhurst, East India merchants, of Manchester and Preston. In 1874 he married Bertha, daughter of Mr G. C. Dewhurst of Lymm, Cheshire. He leaves one son and four daughters, but he lost his eldest son in 1920.

Melvill began his scientific career at an early age by forming a collection of shells when he was eight years old. To this collection he went on adding until it reached over 22,500 in number. He is said to have described about 1000 new species. He had held the office of President of the Conchological Society, and at the time of his death he was President of the Meteorological Society. He was necessarily brought into contact with our late Secretary, Mr Charles Bailey, at Manchester, and a friendly rivalry in obtaining collections existed, but they had one common object—that of enriching the Victoria College of Manchester. They therefore bifurcated their purchases of exsiccata, Melvill taking the extra European, while Bailey went in for the European. This resulted in the magnificent gift to Manchester of 225,000 sheets by Melvill. This, we are told, will be supplemented by his very large collection of grasses and ferns. He had also a very fine collection of Lepidoptera and British insects.

When Lord Morley conferred on him the degree of D.Sc., Professor Lamb said:—"It is chronicled of Solomon that he spake of trees from the Cedar that is in Lebanon, unto the Hyssop that springeth out of the wall, but it is not recorded that he also knew by heart all the shells of the ocean from the Arctic Circle to the Persian Gulf. That double weight of learning was reserved for the accomplished systematist, Mr Cosmo Melvill, and those who know him will ratify with what gracious modesty he sustains it." He was also an F.L.S., F.G.S., and F.Z.S.

Melvill was one of our oldest members, having joined us in 1877. He was a fairly regular contributor to the Club, having sent in over 2000 specimens. At frequent intervals he wrote to the "Journal of *Botany*: 1875—Notes on the Marine Algae of South Carolina and Florida, 127 species being enumerated. 1880—*Bromus maximus* from Jersey, and several forms of *Silene gallica*. 1882—*Rubus spectabilis* in Kent; *Dentaria bulbifera* in Kent and Sussex; Flora of Kersal Moor, where 240 species are enumerated. 1883—*Arum italicum* in Kent, from the Undercliff at Folkestone. 1884—*Hieracium argenteum* in Montgomeryshire. 1887—*Agropyron violaceum* in Perthshire. 1888—*Arum italicum* in Kent. 1889—New Scottish Records; the *Rumex aquaticus* recorded is *R. longifolius*. 1891—Notes on the Flora of the Faroes; about 80 species are noted. 1892—*Trachelium caeruleum* in Guernsey, a new adventive to the British Isles, evidently a garden escape; Species of Strathearn Hieracia, 22 are noted. 1898—*Sisymbrium strictissimum* in Lancashire and Cheshire. 1899—*Chenopodium capitatum* in Carnarvonshire. He was a Member and President of the Literary and Philosophical Society of Manchester, and on November 4, 1878, he gave a list of over 300 species noticed on the Breidden Hills, when he thought he had found a new variety of *Arabis hirsuta*. *Potentilla rupestris* was in existence at that time. His best discovery, or rather rediscovery, was one of George Don's plants—*Triticum alpinum* Don MS., the *T. caninum*, var. *biflorum* Syme, E. B., xi., 177. This is in my own herbarium and in that of Borrer's at Kew. The plants were gathered on Ben Lawers. Buchanan White (*Scot. Nat.*, 326, 1886) named the grass *Agropyron repens*, var. *Donianum* F. B. White (as species) in Perth. Soc. Nat. Sc., xli., 1882, under which name it stands as a species in our "List," but I have little doubt that it is *A. violaceum* Hornem. Mr Mitten (Hooker *Lond. Journ. Bot.*, vii., 533, 1845) brought it to notice as *Triticum biflorum*, but Dr Buchanan White (*Scot. Nat.*, 232, 1890) says that the paleae of the two plants differ. In *Donianum* the ribs form short lateral awns, small and rudimentary at an early stage, becoming conspicuous as the fruit matures; in *violaceum* no trace of the lateral awn appears. Mr Melvill found it on rock-ledges of Ben Lawers, c. 3000 feet, in July 1878 (*Journ. Bot.*, 57, 1887), and recognised that it conformed in every particular with *violaceum*. I believe Melvill and Hanbury afterwards found a single plant above Loch-na-Chat, which they divided. I saw specimens growing in Mr Hanbury's garden and also in Buchanan White's garden in Perth. Dr White also found it in 1888 (see *Trans. Bot. Soc. Edin.*, 260), "as a stout tuft on a rock ledge."

Melvill and I had been correspondents for half a century, but once only had I the pleasure of meeting him in Oxford. At one time he told me he had an idea of writing a new Salop Flora, but that has not matured. It would be a goodly monument to his memory.

PAUL, Rev. DAVID, D.D. 1845-1929. It is with great regret that we hear of the death of the Very Rev. David Paul, D.D., of the Grange Church, Edinburgh. Before being called to that charge, he had been Minister successively at Morebattle and Roxburgh, where, among the border hills, he had every opportunity of indulging his bent for Botany in connection with the Berwickshire Naturalists' Club—the earliest Field Club in England—of which he was in due course President. Somewhat later in life he joined the Edinburgh Botanical Society and became also a member of its offshoot—the Scottish Alpine Botanical Club. While on one of that Club's annual excursions he rediscovered on Ben Lawers *Carex ustulata*, originally reported by Don from the same range. Dr Paul also went, in the interests of the Church, to Guiana and the West Indies, and so was enabled to get a glimpse of the plants of the New World. But it is as a Fungologist that he will always be chiefly remembered, for on Fungi he was one of the very greatest authorities, and the chief expert on them in Scotland, if not in Great Britain. He was a well known Horticulturist and grew many rare plants at Roxburgh where the soil is peculiarly adapted for their cultivation, and where the climate is suitable.—A. H. EVANS.

It may be added that he served for some years as Foreign Secretary of the Botanical Society of Edinburgh, of which he was President, 1899-1901.

ROBERTS, ALEXANDER FOWLER, of Fairnilee. Born 1844; died May 13, 1929. The son of the late Provost of Selkirk, he was educated there and at the Edinburgh Institution and Academy and at Cheltenham. He entered the business of Messrs G. Robertson & Co., Woollen Manufacturers, and became partner and managing director. He became Provost of Selkirk. In his term of office the Victoria Hall was built, and much of its beauty was due to him, and to it he was a liberal contributor. He was a member of the County Council and Chairman of the Selkirk School Board. Endowed with great riches he became a judicious art-collector, and made his home and its surroundings very attractive. In one of the hedges of his estate, Miss Hayward and I found a beautiful yellow rose, of which neither the name nor the history has been quite satisfactorily settled. I also found *Fumaria pallidiflora* in his garden. He was one of our life members.

SALMON, CHARLES EDGAR. 1872-1930. Died suddenly at Reigate on New Year's Day, 1930. By profession he was an architect, a member of the Royal Institute of British Architects and of the Architectural Association. Formerly he had practised in London, but for the last twenty years had confined himself to domestic architecture in Reigate and neighbourhood. He was keenly interested in local history and antiquities, and possessed a valuable collection of old maps and plans. For many years past he had been Secretary and had taken a leading part in the activities of the Reigate and Redhill Open Spaces and Footpaths Protection Society through which has been secured or saved for the nation some of the best ground in that lovely neighbourhood. His critical work on the British Flora is well known to our members and much of it is recorded in the "Journal of Botany" and in the annual "Reports of the Exchange Clubs." In 1902 he was elected a Fellow of the Linnean Society and served on the Council from 1920 to 1923. From 1911 he had been one of the referees to the Watson Club; and he gave freely of his time and knowledge to the local Holmesdale Natural History Club of which he was President last year, the South London Botanical Institute, of which he had been a fellow since 1913, and the Botanical Section of the South-Eastern Union of Scientific Societies, of which he was President in 1928. The eleventh edition of the London Catalogue, with the exception of certain genera, owes its value to his work, in the course of which he traced to its source almost every name included; and the second Supplement to Topographical Botany now appearing in the "Journal of Botany" he prepared in collaboration with the late Arthur Bennett and Prof. Matthews. But the chief work on which he had expended much of his time for many years past is still unpublished. The Flora of Surrey is already in type for a considerable part, and its completion from his manuscript and notes is eagerly anticipated by all interested in British botany. His large and important herbarium, which includes the herbarium of the late Arthur Bennett, has been bequeathed to the British Museum.

In the course of a friendship extending over many years the present writer learnt to appreciate the charm and guileless simplicity of his personality. His transparent honesty of thought, strong common-sense and equable temperament kept him above any form of meanness or selfishness; personal ambition did not touch him and he desired nothing at the cost of others; his happy disposition was entirely free from bitterness, and I never heard him make a remark which could give pain. He had a keen sense of humour and a ready sympathy that made him a delightful companion whether on a botanical expedition or a short visit or even a meal in common. His enthusiasm for natural beauty ranged equally from enjoyment of a glorious view to intense delight in the perfection of tiny things. Indeed his botanical interests were directed to some extent by his interest in small or minute characters, and he has left his mark on the study of certain genera in which such characters have special diagnostic value. Nothing seemed to escape his notice and his critical opinion was reliable precisely because he took so little for granted. Only his intimate friends knew what a fund of exact and detailed knowledge lay behind his comments; even a short note or confirmation of a naming was the result of a thorough examination and reference to authorities, supported by comparison with specimens in his own extensive herbarium. His methods were excellent, his judgment clear and unbiassed, and nothing slipshod or insincere ever came from his pen.

A list of his principal botanical papers is given in the "Journal of Botany," February 1930.—W. C. BARTON.

SCOTT, VICTORIA HENDERINA (Mrs D. H. Scott), née Klaassen. Died suddenly at Oakley, Hants, January 18, 1929. She was elected F.L.S. in February 1905, and became a frequent attender at the meetings of the Linnean Society, the British Association, and the South-Eastern Union of Scientific Societies, where her kindly and genial personality made her most welcome. In 1911, at the Linnean Society, she gave a lantern exhibition of a new species of the fossil genus, *Traquaria*. She wrote several papers on fossil botany. Her help is witnessed to by Dr D. H. Scott in the Annals of Botany for 1903 in his Studies of Fossil Botany and in his Introduction to Structural Botany. She also made a detailed study of the movements of the flowers of *Sparmannia africana*. See Trans. Linn. Soc., 147, 1929.

TRABUT, Dr LOUIS. Born 1853; died April 23, 1929. He was Professor of Natural History at the mixed School of Medicine and Pharmacy at Algiers. With his colleague, M. J. A. Battandier, he wrote a very comprehensive Flore de l'Algérie of that interesting area, and published a memorable account of La Tlaia, *Tamarix orbiculata* Vahl, with full details of its history and its insect pests. He showed (*Journ. Roy. Hort. Soc.*, 250, 1900) that the species of Eucalyptus which have been so extensively planted in Algeria and the Mediterranean regions produce natural hybrids.

TROWER, ALICE. Born 1853; died July 1929. Alice, the surviving and elder sister of our member, Miss C. G. Trower, whose memoir appeared in our *Report* for 1928, died without suffering in July last, and thus Stansteadbury, their beautiful old-world home for over 70 years, remains tenantless. As one said in the short memoir of Charlotte (*Rep. B.E.C.*, 851, 1928), they were the daughters of Captain Edward Trower, and of their mother, who was one of the Guernsey Gosselins, a botanical family. Their brother lived with them for many years until his death. Charlotte's paintings of wild flowers were exceptionally good, and won three of the Grenfell Medals at the Royal Horticultural Society, and in her memory the Brambles were reproduced in our last *Report*. They are as good as blocks can be. Alice, in her early days, painted landscapes, but later on confined herself to collecting British plants for her sister to paint, and thus she had a fair acquaintance with them. Her memory for places was tenacious, and she had a quick eye to detect varieties. They divided their more prosaic duties. Alice looked after the house and its details. She was a wonderful needle-woman. Did not the sisters take out the ink-stained patch from my rose-pink Broussa Prayer-rug, and replace it in tint and texture like the original? Charlotte managed the estate and pedigree cattle, and both did a variety of work outside their domain in the mass of philanthropic Societies which are like the sands of the sea in multitude. Alice acted as organist for the church for over half-a-century. Sometime before her sister's death, Alice suffered much from heart attacks: indeed, on more than one occasion, it was thought she could not recover. Her sister's death was bravely born, and she walked to the service in the church which is close to the Park. On the return I took her home by a short cut, gave her a stimulant, and she went to bed, where I left her, even cheerful. She pulled herself together wonderfully, took up the household keys, and went on in the old way. But the gap left was too wide to be filled with mundane duties. She gradually weakened, and sank to rest, not through the fiery portals of pain, but from sheer weakness. Thus have passed away two most loving and lovable people—lovers of nature in the truest sense. Miss Alice Trower discovered *Lychnis Preslii* at Tantallon and, in her garden, seeds of it produced numerous offspring.

WAGER, Dr HAROLD. Born 1862; died November 17, 1929, buried at Arncliffe. In 1886 he was a student of the Royal College of Science, where he had the advantage of being under Dr D. H. Scott. In 1888 he was appointed demonstrator in biology in the Yorkshire College at Leeds, and with that town and with Yorkshire he has been connected ever since—adding to his associations by marrying Winifred, the daughter of Prof. L. C. Miall. During the war he took over the direction of the Department of Botany in the absence of Prof. J. H. Priestley. He presided over Section K at the South African Meeting of the British Association in 1905. On the occasion of the meeting of the Yorkshire Naturalists' Union in Leeds in 1914, the University of Leeds conferred upon him the D.Sc. He became a Fellow of the Royal Society in 1904, and President of the British Mycological Society in 1910. His publications include "Memoirs on the Cytology and Reproduction of the Lower Organisms," "Physiology of Plants," etc. In later years he severed his connection with academic work, and became a Staff Inspector of H.M. Secondary Schools, Board of Education.

NEW COUNTY AND OTHER RECORDS.

ABBREVIATIONS.—*Rep. B.E.C.*=*Report of the Botanical Society and Exchange Club; Trans. Bot. Soc. Edin.*=*Transactions of the Botanical Society of Edinburgh; Wats. B.E.C.*=*Report of the Watson Botanical Exchange Club; Devon. Tr.*=*Transactions of Devonshire Association of Science, &c.; Journ. Bot.*=*Journal of Botany; Nat.*=*Naturalist; N.W. Nat.*=*North Western Naturalist*, ed., A. A. Dallman; *W.F. Mag.*=*Wild Flower Magazine*, ed., Mrs Dent; *Fern Gaz.*=*British Fern Gazette*, ed., F. W. Stansfield; *Rep. Marlb.*=*Report of the Marlborough College Natural History Society; R.I.C.*=*Journal of the Royal Institute of Cornwall; Rep. Winton.*=*Report of the Natural History Society of Winchester College;* †=Adventive; *=New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names or before a binomial means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Vice-county in *Topographical Botany*; [] enclosing a record mean that confirmatory evidence is needed.

We have to thank the Director of the Royal Botanic Gardens, Kew; Mr J. Fraser, Mr W. O. Howarth, Prof. C. H. Ostenfeld, Prof. O. E. Schulz, Dr Probst, Dr Ronniger, Dr J. Murr, Dr E. Almquist, M. Jaquet, Dr Aellen, Dr Drabble, Mrs Gregory, Mr C. E. Britton, Dr Dahlstedt, M. Patrice de Riencourt de Longpré, Col. A. H. Wolley-Dod, Mr I. A. Williams, Dr Zahn, Mr W. H. Pearsall, Mr H. W. Pugsley, Mr A. R. Horwood, Mr W. Watson, Mr D. Lumb, Mr C. V. Marquand, Rev. H. J. Riddelsdell, and others who have rendered critical assistance.

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†1/1. CLEMATIS VITALBA L. Balquhidder, West Perth, on old Kirk ruin, WEBB.

2/3. THALICTRUM MARINUM Druce. (DUNENSE). North Denes, E. Norfolk, E. A. ELLIS.

3/2. ANEMONE NEMOROSA L., var. CAERULEA DC. Copse on the old canal between Tonbridge and Penshurst, W. Kent, 1881, LITTLE. This corrects an erroneous record.

4/2. ADONIS AESTIVALIS L. Splott, Cardiff, Glamorgan, R. L. SMITH.

6/3. RANUNCULUS ACER L., var. MINUTIFLORUS Druce. Dr Parkin tells me about three per cent. of plants near Wigton, Cumberland, come under this form.

6/6. R. LINGUA L. The usual hairy form in Askham Bog, York, August 1929, DRUCE.

6/7. R. FLAMMULA L., var. ANGUSTIFOLIUS Wallr. Dunsford, S. Devon, Miss LARTER.

6/21. R. CIRCINATUS Sibth. Kenfig Pool, Glamorgan, Miss E. VACHELL.

6/24. R. HETEROPHYLLUS Weber, var. TRIFIDUS Pearsall. Wood Walton, Hunts, with carpels nearly glabrous, DRUCE, teste PEARSALL.

6/31. R. LENORMANDI F. Schultz. A form with peculiar leaves (possibly a hybrid), Burton Mere, S. Lancs, June 1928, HOLDER. Named by PEARSALL.

6/32. R. HEDERACEUS L. This is the *R. Lenormandi* of H. N. Dixon from Hazelbeech, Northants. See *Journ. Northants N.H.S.*

9/2. HELLEBORUS FOETIDUS L. Crawley Butts, Gower, Glamorgan, WEBB.

11/1. AQUILEGIA VULGARIS L., forma CAERULESCENS Dr. Found by Mrs THOMPSON in Stockton Wood, Wilts, June 1929. The plants were two feet high and had large flowers of a pale blue (*Myosotis*) colour.

†12/1. NIGELLA DAMASCENA L. Beaulieu, S. Hants, 1929. GRIERSON.

14/1. ACONITUM ANGLICUM Stapf. Wood near a stream near Burton-on-Trent, Derbyshire, Sir ROGER CURTIS.

†21/1. PAPAVER SOMNIFERUM L., var. LEPTOCAULATUM. Bassett, S. Hants, PACK, ex RAYNER. I know nothing of it.—DRUCE.

21/2. P. RHOEAS L., var. STRIGOSUM Boenn. Wymondley Road, Hitchin, Herts, LITTLE.
Var. TROWERIAE Dr. Walton, E. Suffolk, BEMROSE.

21/4. P. LECOQII Lamotte. Burton-on-Trent, Derby, DRUCE; Stevenage, Herts, stigmatic rays reduced to four, LITTLE.

22/1. MECONOPSIS CAMBRICA (L.) Vig. Woody Bay, N. Devon, October 1929, DRUCE.

†23/1. GLAUCIUM GLAUCIUM (L.) Karst. With varying tints of orange to scarlet, Burton-on-Trent, Staffs, DRUCE and CURTIS.

†28/1. ESCHSCHOLZIA DOUGLASII Walp. Burton-on-Trent, Staffs, 1929, DRUCE and CURTIS.

31/1. CAPNOIDES CLAVICULATA (L.) Dr. Growing over a fallen tree in a wood near Woodbridge, Suffolk, 1929, Miss D. NICHOLLS. Already recorded in the *Flora of Suffolk*.

32/4. FUMARIA PURPUREA Pugsl. Arnside, Westmorland; Fleckburgh, Lancs, MASON.

32/5. F. BORAEI Jord. Eastham, Cheshire, MASON; Hayle, Cornwall, DRUCE.
Var. GRACILIS Pugsl. Thornton Hough, Cheshire, MASON.

*32/6. F. MURALIS Sonder, var. DECIPIENS Pugsl. Boughrood, Radnor, September 1929, DRUCE.

32/9. F. BASTARDI Boreau. Walton, E. Suffolk, BEMROSE; Martin Mere, S. Lancs, HOLDER and WAGSTAFFE.
Var. HIBERNICA Pugsl. West Kirby, Cheshire, MASON.

32/10. F. OFFICINALIS L., var. WIRTGENI Hausskn. Shelford, Cambridge, MASON; Basildon, Berks, DRUCE.
Var. MINOR Koch. Burton-on-Trent, Staffs, DRUCE.

33/1. MATHIOLA INCANA Br. Alderney, 1929, ex Miss E. VACHELL.

†34/1. CHEIRANTHUS CHEIRI L. Clyro, Radnor, WEBB.

35/2. RADICULA SYLVESTRIS Dr. Beaulieu, S. Hants, very rare in the county, DRUCE; Southwick, Sussex, Mrs WEDGWOOD; Hale, S. Lancs, J. D. MASSEY.

35/4. R. ISLANDICA (Oeder) Dr., var. MICROCARPA (Beck) Britton. Thames-side, between Mortlake and Kew, Surrey, BRITTON.

36/4. BARBAREA ARCUATA Reichb. Burton-on-Trent, Staffs, DRUCE, teste Prof. O. E. SCHULZ as var.

†*37/1. ARABIS HIRSUTA Scop. A garden weed at Brough Lodge, Fetlar, JOHNSTON in *Trans. Bot. Soc. Edin.*

†37/12. A. CAUCASICA Willd. Heath sand-pits, Beds, 1929, DRUCE; on a wall, Stromness, Orkney, JOHNSTON.

39/3. CARDAMINE IMPATIENS L. Bramley, Surrey, 1929, F. CLARKE. This is the var. APETALA Moench.—DRUCE.

†42/10. ALYSSUM MARITIMUM Lam. Established at Woodthorpe, near Staveley, Derby, DRABBLE; Ascot, Berks, garden form, DRUCE.

45/7. COCHLEARIA DANICA L. Marsh-side, north of Southport, S. Lancs, always heliotrope or lilac colour, April 1929, HOLDER.

†47/2. HESPERIS MATRONALIS L. In a meadow near Cuxham, Oxon, on rubbish, DRUCE; in great beauty and plenty in copses at Trapp, Llandeilo, Carmarthen, WEBB.

†48/1. WILCKIA MARITIMA Scop. Southport, Lancs, HOLDER; Kennington, Berks, DRUCE.

†49/3. SISYMBRIUM ALTISSIMUM L. Thornton Hough, Cheshire, 1929, MASON; Hassocks, E. Sussex, Lady ALETHEA BUXTON; South Molton, N. Devon, DRUCE.

†49/4. S. ORIENTALE L. Cowling, Grassington, Barnoldswick, etc., Yorks, FRANKLAND; Malham, Yorks, GAMBIER-PARRY; Skipwith, Yorks, DRUCE.

†49/13. S. LOESELII L. Newport, Isle of Wight, LONG; Ascot, DRUCE and Lady DAVY.

†49/15. S. POLYCERATUM L. Burton-on-Trent, Staffs, DRUCE.

50/1. ERYSIMUM CHEIRANTHOIDES L. South Molton, N. Devon, DRUCE.

†51/1. CONRINGIA ORIENTALIS (L.) Dum. Great Wymondley, Hitchin, Herts, LITTLE; Sketty, Glamorgan, C. MARKS.

†54/7. BRASSICA TOURNEFORTII Gouan. Burton-on-Trent, Staffs, DRUCE, teste Prof. O. E. SCHULZ.

†54/16. B. JUNCEA (L.) Czern. & Coss. South Molton, N. Devon, September 1929; Newhaven, E. Sussex, DRUCE, teste Prof. O. E. SCHULZ; Shawford Railway, S. Hants, RAYNER; Tiverton, Devon, Col. WATTS.

(BURSA.—All the plants have been named by Dr E. Almquist.)

59/2. BURSA ABSCISSA (E. At.). Byfleet, Surrey, DRUCE.

59/3. B. ANGLICA (E. At.). Tenby, Pembroke, Miss TODD; Burnham, Somerset; Burton-on-Trent, Derby, DRUCE; Wymondley, Herts, H. PHILIPS.

59/4. B. BATAVORUM (E. At.). Sheepstead, Frilford, Berks; Tewkesbury, Bristol, W. Gloster; Tusmore, Oxon; Mells, N. Somerset; Fawler, Ivinghoe, Bucks; Thorpe, Northants; Penzance, Cornwall; Avoca, Wicklow, DRUCE.

59/5. B. BELGICA (E. At.). Gangsdown, Oxon; Tewkesbury, W. Gloster, DRUCE.

59/6. B. BREMENSIS (E. At.). Bowood, Wilts; Badby, Northants; Kingstown, Dublin, DRUCE.

59/7. B. BRITTONII (E. At.). Trewsbury, Gloster; Kennington, Berks; Skipwith, Yorks; Inchdowrie, Clova, Angus, DRUCE.

59/9. B. DRUCEANA (E. At.). Tenby, Pembroke, Miss TODD; Ascot, Berks; Aynhoe, Northants; Riever, N. Wilts; Bowood, S. Wilts; Aynhoe, Cuxham, Oxon; Avoca, Wicklow, DRUCE; Wymondley, Herts, H. PHILIPS.

59/10. B. GALLICA (E. At.). Highbridge, N. Somerset; Frilford, Berks; Wheatley, Oxon; Burton-on-Trent, Buxton, Derby, DRUCE; Blisworth, Northants, DIXON.

59/20. B. PATAGONICA (E. At.). Coleman's Moor, Kennington, Aldermarston, Berks; Hambleden, Bucks; Burnham, Mells, N. Somerset; Stow Wood, Oxon; Stansteadbury, Herts; Riever Wood, N. Wilts; Bowood, S. Wilts; Skipwith, Yorks; Hayle, Penzance, Cornwall, DRUCE.

59/24. B. ROBUSTA (E. At.). Byfleet, Surrey; Weston-super-Mare, N. Somerset; Burton-on-Trent, Derby, DRUCE.

59/26. B. TREVIRORUM (E. At.). Hitchin, Herts; Bury St Edmunds, W. Suffolk, H. PHILIPS; Weston-super-Mare, N. Somerset; Glasbury, Radnor, DRUCE; Barby, Horton, Barnack, Northants (*Nat. Hist. Herb.*).

59/27. B. TURONIENSIS (E. At.). Burton-on-Trent, Derby; South Molton, N. Devon; Wareham, Dorset; Malvern, Worcester; Gravestone, Yorks; Coleman's Moor, Berks; Riever, N. Wilts; Winterborne Steepleton, Dorset; Glasbury, Radnor, DRUCE; Oxsted, Surrey, June 19, 1927 (as *mediterranea*), in *Rep. B.E.C.*, 725, 1928, J. E. LOUSLEY.

†60/1. CORONOPUS DIDYMUS Sm. On rubbish about Ascot, Berks, a comparatively recent introduction into the county, DRUCE and Lady DAVY.

*60/2. C. CORONOPUS (L.) Karst. Hay, Brecon; Clyro, Radnor, WEBB.

†61/2. LEPIDIUM LATIFOLIUM L. Just before Baldock, on the Royston and Baldock road, Miss MARGARET BROWN, v.sp.

†61/3. L. DRABA L. A pest of arable land, Gobions Farm, Stapleford, Herts, 1929. It has spread over N. Herts in a most remarkable manner during the last 30 years and is now met with everywhere, LITTLE.
Var. SUBINTEGRIFOLIUM Mich. Burton-on-Trent, Staffs, 1929, DRUCE.

†61/4. L. RUDERALE L. Abundant at Malvern Railway Station, Worcester, DRUCE.

61/7. L. SMITHII Hook., var. ALATOSTYLUM (Towns.). Bridford, R. WATERFIELD in *Devon Tr.*, 96, 1929.

†61/8. L. PERFOLIATUM L. "New York," near Boston, Lincs, E. J. HURST.

†61/10. L. CHALEPENSE L. Burton-on-Trent, Staffs, DRUCE and CURTIS.

†61/20. L. VIRGINICUM L. Burton-on-Trent, Derby, July 1929, DRUCE and CURTIS, teste AELLEN.

†61/22. L. DENSIFLORUM Schrad. Ascot, Berks; Burton-on-Trent, Staffs; Hovingham, Yorks, DRUCE, teste SCHULZ.

†61/24. L. NEGLECTUM Thell. Burton-on-Trent, Staffs, July 1929, DRUCE and CURTIS, teste AELLEN.

64/1. THLASPI ARVENSE L. Bosahan, Cornwall; South Molton, N. Devon, DRUCE; new sea wall, Southport, S. Lancs, HOLDER and WAGSTAFFE; Ness, Stromness, Orkney [4127], JOHNSTON.

†65/2. IBERIS UMBELLATA L. Hillside near Southport, S. Lancs, HOLDER and WAGSTAFFE.

†72/1. MYAGRUM PERFOLIATUM L. Burton-on-Trent, Staffs, DRUCE and CURTIS.

†74/2. BUNIAS ORIENTALIS L. Common about Basildon, Berks; North Leach, Andoversford, E. Gloster, DRUCE.

†79/1. ERUCARIA HISPANICA (L.) Dr. Southampton, 1929, Miss TODD; Burton-on-Trent, Staffs, DRUCE and CURTIS.

†85/1. RESEDA ALBA L. Burton-on-Trent, Staffs, DRUCE and CURTIS.

87/1. HELIANTHEMUM HELIANTHEMUM (L.) Karst. Pont Erwyd, Cardigan, WEBB.

*88/3. VIOLA SILVESTRIS Lam. Tarbert, N. Harris, August 1928, DRUCE.

Var. PUNCTATA Dr. Riever, Berks and Wilts, DRUCE.

88/4. V. RIVINIANA × RUPESTRIS. Shefford Woodlands, Berks, DRUCE.

Var. DIVERSA Greg. Shefford, Berks, DRUCE.

*88/5. V. RUPESTRIS Schmidt, var. GLABRESCENS Becker. Arncliffe, Yorks, MASON; Rancliff Wood, Notts, BULLEY; Woody Bay, N. Devon; Shefford, Berks, DRUCE.

Var. SUBPUBESCENS Greg. Shefford, Berks.

88/6. V. CANINA L. × LACTEA = INTERMEDIA (Wats.). Melmerby, Cumberland, May 1915, MASON.

88/8. V. ODORATA L., var. DUMETORUM (Jord.). Common in Glamorgan, Miss VACHELL.

Var. SUBCARNEA (Jord.). St Nicholas, Llantrithyd, Glamorgan, Miss VACHELL.

88/14. V. CONTEMPTA Jord. Coleman's Moor, Berks, July 1929, DRUCE. Distributed this year.

88/15. V. VARIATA Jord., var. SULPHUREA Drabble. High Over Farm, Hitchin, Herts, H. PHILIPS, teste DRABBLE; Bradenham, Bucks, specimens distributed this year; type, Newtimber, Sussex, DRUCE.

88/17. V. MONTICOLA Jord. Sennen, Cornwall, Miss M. THURSTON in Thurston's *Notes on the Cornish Flora*, 2, 1929.

88/22. V. AGRESTIS Jord. High Over Farm, Hitchin; Letchworth; Wilbury Hill, Herts, H. PHILIPS, teste DRABBLE; Aynhoe, Northants and Oxon; Riever, Wilts; Forfar, Angus, DRUCE.

88/24. V. OBTUSIFOLIA Jord. Rushcliffe, Notts; Hinton, Northants, DRUCE.

88/25. V. LATIFOLIA Drabble. Near Saunton, N. Devon, September 1929; garden weed, Oxford Botanic Gardens, DRUCE.

88/26. V. RURALIS Boreau. Chalky fields, Gangsdown Hill, Oxon, 1929, untypical, DRUCE.

88/28. V. DESEGLISEI Jord. High Over Farm, Hitchin; Little Wymondley, Herts, H. PHILIPS, teste DRABBLE; *Symond's Yat, W. Gloster, a long and straggling form, DRUCE.

88/31. V. LEPIDA Jord. Melvich, W. Sutherland, DRUCE.

88/33. V. LUTEA Huds. (The yellow-flowered form). Balnaboth, Angus, August 1929, DRUCE.

88/34. V. CURTISII Forst. The yellow-flowered form, FORSTERI. Thetford, Norfolk, H. PHILIPS.

88/35. V. PESNEAUI Lloyd & Foue. Links of Tresta, Fetlar, JOHNSTON in *Trans. Bot. Soc. Edin.*, teste DRABBLE.

†93/3. TUNICA SAXIFRAGA Scop. Garden escape, Abbotsbury, Dorset, Sir M. ABBOT ANDERSON.

†95/1. SAPONARIA OFFICINALIS L. Boughrood, Radnor, September 1929, DRUCE.

96/2. SILENE ANGUSTIFOLIA S. & T., var. PUBESCENS (DC.). Marlborough, Wilts, Mrs WEDGWOOD.

96/3. S. CONICA L. In clover, near High Down, Herts, 1875, leg. JAS. POLLARD. By the kindness of Miss Pollard, I have been allowed to examine two sheets in the Herbarium of Joseph Pollard, of High Down. One is *Silene anglica* L. and the other *S. quinquevulnera* L. Dr Drabble concurs. This removes the only record of *S. conica* for Herts, LITTLE.

96/4. S. NOCTIFLORA L. South Molton, N. Devon, DRUCE.

96/10. S. DUBIA Herbich. *The Flora of Hampshire* and *Supplement* record only *S. nutans* L., but *S. dubia* Herbich is recorded for South Hants, v.-c. 11, in the second *Supplement to Topographical Botany*, on the authority of "Reid sp. to Salmon." The Portsea island plant distributed this year is apparently *dubia*, as is also the plant from Browndown, which is adjacent to Stokes Bay, Gosport. The other stations for *nutans* in v.-c. 11 are a doubtful record for Portsdown, in the same district as the above two stations, and Milford in the New Forest district. There would therefore appear to be considerable doubt as to the occurrence of *S. nutans* in v.-c. 11, all being *S. dubia* Herbich, with the exception, possibly, of the Milford station.—P. M. HALL.

†96/20. S. ARMERIA L. Found by Mrs HARDINGE on the edge of a ploughed field among nettles, groundsel and chickweed, near Chapel House, Dumfriesshire, October 1929, ex Hon. Mrs ADEANE.

†96/24. S. MUSCIPULA L. Burton-on-Trent, Staffs, DRUCE and CURTIS.

†98/6. LYCHNIS PRESLII Sekera. A small patch of it growing among bushes near a path and close to ordinary *L. dioica* L. A most interesting discovery made by Miss ANN WYNDHAM of Orchard Wyndham, Somerset, who sent it to the Botanical Section of the Somerset Archæological Society. The specimen was sent to me by the advice of Mr W. D. Miller. This solitary clump of the *Lychnis Preslii* helps to support the theory that it is a mutant, but one awaits further exploration of the neighbourhood.—DRUCE.

*100/2. CERASTIUM ARVENSE L. Oat fields, etc., Sandwick, Orkney, JOHNSTON in *Trans. Bot. Soc. Edin.*

101/6. STELLARIA DILLENIANA Moench. Askham, Yorks, August 1929. This is the wholly green form, *VIRIDIS Fries. DRUCE.

101/7. S. GRAMINEA L., monstrosa. In a damp copse, north of the Hog's Back, Surrey, as a small clump about two feet high, July 1929. This differs from the type in its much wider sepals, the shorter and more rounded points of the petals, and its abundance of flowers from each stalk, C. M. ASH. The sepals are shorter than usual, and the veins are strongly marked. A few of the flowers have 10 petals, others are again apetalous. It appears to be a monstrous condition.—DRUCE.

103/8. SAGINA APETALA Ard., var. PROSTRATA S. Gibs. Welland, Worcester, TOWNDROW.

103/9. S. REUTERI Lange. Gravel walks, Tenby, Pembroke; Tedstone Delamere, Hereford; wall of Cotheridge Court, Worcester, TOWNDROW; Burnham, N. Somerset, MILLER, teste W. H. PEARSALL. It is still growing at Malvern Station, where I was just in time to prevent it being poisoned with weed-killer.

103/11. S. PROCUMBENS L., var. PENTAMERA (R. & F.) Dr. Santon Warren, Norfolk, LITTLE.

105/1. SPERGULARIA RUPICOLA Lebel. Lizard, Cornwall, Miss OVERY.

*105/3. S. SALINA Presl. In garden gravel of Weston Park, Shipston-on-Stour, Warwick, RIDDELSDELL in *Journ. Bot.*, 283, 1929.

†108/1. CLAYTONIA SIBIRICA L. Side of brook, Kendal, Westmorland; streams close to Cartmel Fell, Lancs, 1929, LOUIS BAKER; near Cadby, Leicester, F. SOWTER.

112/1. HYPERICUM ANDROSAEMUM L. Woody Bay, N. Devon, DRUCE.

112/7. H. MONTANUM L. Llansannor, Glamorgan, a glabrescent form, but with very short hairs on under side of leaves, Miss VACHELL.

*112/8. H. HIRSUTUM L. Burn of Geo Firth, Orkney [4074], JOHNSTON in *Trans. Bot. Soc. Edin.*

112/9. H. PULCHRUM L., var. PROCUMBENS Rostr., or near it. Clare Island, Mayo, W. CARRUTHERS and Mrs WEDGWOOD.

112/12. H. QUADRANGULUM L. Sibford, Oxon. A few of the upper leaves have a few pellucid spots but the sepals are not all rounded at the top as they should be in var. *occidentale* Franchet. It needs further study, DRUCE.

*112/13. H. DESETANGSII Lamotte. A weed in Botanic Garden, Cambridge, and in Mr Foggitt's garden at Thirsk, Yorks, DRUCE, teste DRABBLE.

†115/2. ALTHAEA HIRSUTA L. Medina, Isle of Wight, LONG.

117/1. MALVA MOSCHATA L., var. GERANIIFOLIA W. & L. Ascot, Berks, DRUCE.

117/2. M. SYLVESTRIS Brot., var. LASIOCARPA Druce. Burry Port, Carmarthen, Miss TODD.

Var. MICRANTHA Bromf. Burton-on-Trent, Staffs, DRUCE, teste FRASER.

†117/4. M. PUSILLA Sm. Tenby, Pembroke, Miss TODD.

†117/7. M. NICAEENSIS All. Burton-on-Trent, Staffs, DRUCE; Splott, Cardiff, Glamorgan, R. L. SMITH.

124/1. RADIOLA RADIOLA (L.). Roan Island, W. Sutherland, Mr JUSTICE TALBOT.

127/1. GERANIUM SANGUINEUM L., var. ALBIFLORUM. Birkdale, S. Lancs. Flowers one inch across. The plant may be of garden origin, HOLDER.

*127/3. G. SYLVATICUM L. Llangiwg, Glamorgan, C. MARKS, ex WEBB.

127/5. G. PHAEUM L. Near south gate of Knole Park, Sevenoaks, 1879, leg. H. N. LACHLAN, J. E. LITTLE.

127/14. G. ROBERTIANUM L., var. ALBUM. Hedgebank at Roccombe, S. Devon, and cultivated at Torquay without change of colour, Miss C. E. LARTER.

127/15. G. PURPUREUM Vill. Woody Bay, N. Devon, DRUCE.

†127/16. G. MACRORRHIZUM L. Herefordshire, Miss H. BALLARD, ex TOWNDROW.

†127/19. G. NODOSUM L. Skelwith village, Langdale, Westmorland, WEBB.

128/3. ERODIUM CICUTARIUM L'Hér., var. NEGLECTUM B. & S. Ainsdale, Lancs; Wexford, Ireland; Kenfig, Glamorgan, DRUCE.

132/1. OXALIS ACETOSELLA L., var. SUBPURPURASCENS DC. Bishops Tawton, R. TAYLOR; Harpford, Rev. G. HARRIS in *Devon Tr.*

†132/3. O. STRICTA L. Martin's Mere, Southport, S. Lancs, HOLDER and WAGSTAFFE; garden weed, Llandaff, Dyffryn, etc., Glamorgan, Miss VACHELL. It is given for Glamorgan in *English Botany*.

†133/4. IMPATIENS GLANDULIFERA Royle. River bank near Garrowby, E. Yorks, MARCHIONESS OF TITCHFIELD; Dunsfold, Surrey, GRIERSON; Fawley Court, Bucks, DRUCE.

136/1. ILEX AQUIFOLIUM L., var. LAURIFOLIUM Lej. Thursley, Surrey, Mrs WEDGWOOD.

†139/1. STAPHYLEA PINNATA L. Copse at Bowness, Westmorland, WEBB.

142/2. ACER CAMPESTRE L., var. LEIOCARPON Wallroth. Marlborough, N. Wilts, Mrs WEDGWOOD; Ufton, Warwick; Byfield, Northants, DRUCE; Lurgashall Mill. W. Sussex; Wymondley Road, Hitchin, Herts. LITTLE.

149/2. ULEX GALLII Planch., var. HUMILIS Planch. Above Woody Bay. N. Devon, DRUCE.

152/1. TRIGONELLA M. ORNITHOPODIOIDES DC. Growing on the shingly court-yard of Bosahan House, Cornwall, Miss CLARICE VIVIAN and DRUCE.

†152/14. T. ARABICA Delile. Burton-on-Trent, Staffs, DRUCE.

†153/1. MEDICAGO FALCATA L., var. TENUIFOLIOLATA Vuyck. Spital, Derby, DRUCE.

†153/2. M. SYLVESTRIS Fries. Perfectly naturalised near the shore, and near the Penally sub-way, Grangetown, Cardiff, Glamorgan, Miss VACHELL.

†153/6. M. MINIMA Desr., var. ELONGATA Rochel. Wool alien, Wymondley, Herts, LITTLE.

†154/4. MELILOTUS INDICA (L.) All. Sturton. E. Suffolk, H. L. GREEN; Pomona Cottage, Finstown, Orkney, JOHNSTON in *Trans. Bot. Soc. Edin.*

155/2. TRIFOLIUM PRATENSE L., var. PARVIFLORUM Bab. Alburgh, Norfolk, MASON.

155/3. T. OCHROLEUCON Huds. Alburgh, Norfolk. MASON.

†155/4. T. INCARNATUM L., var. STRAMINEUM Presl. Par Moor, Cornwall, MEDLIN, ex THURSTON.

†160/1. LOTUS SILIQUOSUS L. Plantation border on Pangbourne Down, Berks, DRUCE. Distributed this year.

†166/6. ASTRAGALUS BOETICUS L. Burton-on-Trent, Staffs, DRUCE and CURTIS. It still persists at Bath, and was flowering freely when Mr Green showed it us this year.

†170/1. CORONILLA VARIA L. Naturalised on the railway near Newhaven, Sussex, DRUCE and Lady ALETHEA BUXTON; Morn Hill, Winchester, Hants, Miss WHALE, ex RAYNER; Barnby Dun Station, Yorks, J. GOSTELOW, ex DALLMAN in *N.W. Nat.*, 194, 1929.

†171/4. ORNITHOPUS ROSEUS Dufour. Wood Vale, S. Lancs. F. H. GREEN.

176/1. VICIA SYLVATICA L. In some plenty on the steep banks and rocks of Woody Bay, N. Devon, DRUCE.

†176/5. V. VILLOSA Roth. Railway on the N. Denes, E. Norfolk, E. A. ELLIS.

176/36. V. GRACILIS Lois. Littleham, Devon, v.-c. 3, Major ORME. (Not v.-c. 4, teste Miss LARTER, in *Journ. Bot.*, 192, 1929.)

†178/1. LATHYRUS LATIFOLIUS L. Naturalised in the parish of Trewsbury, E. Gloster, Miss DIANA CATOR; on the Lynton railway-banks, N. Devon, DRUCE.

†178/3. L. TUBEROSUS L. In a shrubbery, Owslebury, S. Hants, Mrs PIERCE, ex RAYNER. Said to be spontaneous.

178/8. L. NISSOLIA L. Bramfield, Herts, in immense profusion, on heavy clay, derelict and arable, making great patches of many square yards, LITTLE.

(RUBUS RECORDS.—All determined by Mr W. Watson.)

185/3. RUBUS FISSUS Lindl. Near Norbury, Staffs, August 1920, S. A. BENNETT.

185/6. R. PLICATUS W. & N., the pink-flowered form = R. ROSULENTUS P. J. M. Queen's Mere, Berks, July 1929, DRUCE.

Var. BERTRAMII (G. Braun). Bognor Common, Sussex, July 1914, CUMMING (as *R. nitidus*, var. *albiflorus*).

Var. AMBLYPHYLLUS (Boul.) Sudre. Royal Common, Elstead, Surrey, August 1904, CUMMING (as *plicatus*).

185/8. R. OPACUS Focke. Witley Common, Surrey, August 1908, CUMMING (as *holerythros*).

185/14. R. IMBRICATUS Hort. var. DISCOLOR Sudre. Molland, N. Devon, September 1929, DRUCE.

Var. LONDINENSIS Rogers. Perranarworthal, Cornwall, August 1908, F. H. DAVEY (as *nemoralis* P. J. M., fide ROGERS).

185/18. R. LINDLEIANUS × ? CARDIOPHYLLUS. Limpsfield Common, Surrey, July 1913, FOX (as *R. Colemanni* Bab., teste E. F. LINTON).

185/19. R. ARGENTEUS W. & N., var. LONGICUSPIDATUS Sudre. Watersmeet, near Lynton, N. Devon, September 1929, DRUCE; Durdham Down, Bristol, W. Gloster, July 1910, Miss I. M. ROPER (as type).

185/24. R. OXYANCHUS Sudre. Branksome Park, Dorset, September 1902, ROGERS (as *nemoralis* P. J. M.).

Var. SILURUM (Ley). Hill, near Banbury, Oxon, RIDDELSDELL in *Journ. Bot.*, 283, 1929. Written without brackets, but I do not think Ley ever wrote *R. oxyanchus*, var. *Silurum*.

185/25. R. CARDIOPHYLLUS L. & M. Tadmarton, Oxon, August 1929, DRUCE; Witley Common, Surrey, August 1908, CUMMING (as *argentatus*); Clifton Down, Bristol, W. Gloster, August 1907, WHITE (as *rhamnifolius* W. & N.).—"Yes, the usual British form of this species."—W. M. R.

185/29. R. POLYANTHEMUS Lindeb. Redhill, Northants, August 1927, DRUCE.

185/30. R. MAASSII Focke, var. GLABRATUS (Bab.). Aber, Carnarvon, July 1899, DRUCE (as *R. ammobius* Focke, det. Focke).

185/33. R. MERCICUS Bagn., var. BRACTEATUS Bagn. Market Rasen, Lincs, August 1907, CUMMING (as *R. pallidus*).

185/40. R. RHOMBIFOLIUS Weihe. Colgate, St Leonard's Forest, W. Sussex, July 1906, WHITE (as *R. holerythros* Focke).

185/41. R. SCIAPHILUS Lange. Badby Wood, Northants, August 1921, RIDDELSDELL (as *R. silvaticus* W. & N.).

185/43. R. RAMOSUS Briggs. Wellingtonia Avenue, Berks, July 1929, DRUCE.

185/45. R. WINTERI P. J. M. Blackthorn, Bucks, September 1929, DRUCE.

185/48. R. PUBESCENS Weihe. By Kilsby Station, Northants, July 1913, CUMMING (as *thyrsoideus*).

185/52. R. LENTIGINOSUS Lees. Wellingtonia Avenue, Berks, July 1929, DRUCE.

185/56. R. SCHLECHTENDALII (Weihe). South Newington Hill, Oxon, July 1919, RIDDELSDELL. This Mr Watson refers to *R. Macrophylloides* Genev.
Var. ANGLICUS Sudre. Shotover, Oxon, August 1925, DRUCE (as type, det. RIDDELSDELL).
Var. MACROPHYLLOIDES (Genev.). Badby, Northants, CUMMING (as *sylvaticus*).

185/66. R. PYRAMIDALIS × ? CARDIOPHYLLUS. Bagley Wood, Berks, August 1929, DRUCE.

185/72. R. LASIOCLADOS Focke, var. ANGUSTIFOLIUS Rogers. Bagley Wood, Berks, August 1929, DRUCE.

185/80. R. MUCRONIFER Sudre. Redhill, Northants, August 1927, DRUCE.

185/83. R. ALTERNIFLORUS M. & L. Wimbledon Common, Surrey, July 1921, RIDDELSDELL (as *argenteus* W. & N., f. *glandulosa*).

185/84. R. APICULATUS W. & N. Ross Wood Estate, Ross, Hereford, September 1907, CUMMING (as *R. rosaceus*).

Var. ANGUSTICUSPIS (Sudre) Dr. Redhill, Northants, August 1927, DRUCE; road by south end of Kilsby Tunnel, Warwick, July 1913, CUMMING (as *thyrsoideus*).

185/91. R. ERICETORUM Lef. Redhill, Northants, August 1927, DRUCE.

185/95. R. NEWBOULDII Rogers. Lambridge Wood, Oxon, September 1929; Staffordshire, 1928, DRUCE.

185/98. R. GRIFFITHIANUS Rogers. (R. ERICETORUM Rogers, non L. & M.). Godalming, Surrey, August 1908, CUMMING.

185/103. R. ANDERSONII Lef. Littleworth Common, Surrey, August 1921, BARTON (as *festivus* M. & L.).

185/110. R. FUSCUS W. & N., var. HYPOSERICEUS Sudre. Wellingtonia Avenue, Berks, July 1929, DRUCE. Mr Watson thinks that this should be placed under *insericatus*.

185/112. R. PALLIDUS Weihe, var. LEPTOPETALUS Rogers. Forest near Micheldene, Gloucester, August 1907, CUMMING.

185/122. R. ROSACEUS W. & N., var. SCABRIPES (Genev.) Sudre. Feugh, Banchory, Kincardine, August 1927; Redhill, Northants, August 1927, DRUCE.

185/125. R. RUFESCENS L. & M. Birch Halt, Hereford, August 1907, CUMMING (as *R. hystrix*).

185/137. R. ANGUSTIFRONS Sudre, var. PALLIDISETUS Sudre. Bognor Common, Sussex, July 1914, CUMMING (as *R. serpens*).

185/145. R. TERETICAULIS Rogers. Boars Hill, Oxon, 1925, DRUCE (as *R. scaber*, det. RIDDELSDELL); Lodge Grove, Bishops Wood, Ross, Hereford, CUMMING (as *fuscus*).

185/148. R. INAEQUABILIS Sudre, var. ARISTISEPALUS Sudre. Wood borders, Upper Sapey, Herefordshire, August 1901, AUGUSTIN LEY (as *praeruptorum* Boul., det. Rogers).

185/149. R. DUMETORUM W. & N., var. FEROX (Weihe) Rogers. Twelve O'clock Drive Wood, Warwick, CUMMING (as *pallidus*).

185/151. R. CORYLIFOLIUS × VESTITUS. Sibford Mill, Oxon, August 1929, **DRUCE**.

187/2. ×GEUM INTERMEDIUM Ehrh. (RIVALE × URBANUM). Abundant in Asham Wood, Mells, Somerset, with Lady **HORNER**, July 1929. **DRUCE**.

188/2. FRAGARIA VESCA L., var. ALBESCENS Druce in *Rep. B.E.C.*, 394, 1927. Near Bridgend, Glamorgan, Miss **CONSTANCE VERITY**, ex Miss **VACHELL**.

189/2. POTENTILLA RUPESTRIS L. Still exists in Wales, although exterminated on Craig Briedden, **DRUCE**.

189/7. P. REPTANS L., var. FLORE-PLENO. Tenby, Pembroke, Miss **TODD**.

†189/11. P. NORVEGICA L. Attenborough, Notts, **BULLEY**; Guildford, Surrey, **CLARKE**; Burton-on-Trent, Staffs, **DRUCE**.

†189/17. P. INTERMEDIA L. Tregornith, Cornwall, **TRESIDDER**, ex **THURSTON**.

†189/22. P. ALBA L. Growing in long grass near an old over-grown garden (which was doubtless its origin), near Inchture, Ballinluig, Mid-Perth, F. **WILSON**.

190/2. ALCHEMILLA PRATENSIS Schmidt. Near Widdy Bank, Teesdale, Durham, with a form less hairy below, **DRUCE**.

190/3. A. CURTILOBA Buser. Middleton-in-Teesdale, on N.W. Yorkshire side of the Tees, v.-c. 64. **DRUCE**.

190/4. A. MINOR Huds. (FILICAULIS Buser). Talgarth, Radnor, September 1929, **DRUCE**.

190/5. A. PASTORALIS Buser. Middleton. N.W. Yorks, and Durham, August 1929, **DRUCE**.

190/8. A. ALPESTRIS Schmidt. Cave Hill, Antrim; Balnaboth, Angus, as a form *vegeta*; Middleton-in-Teesdale, Durham, as a form "à lobes un peu tronqués," but in other characters typical, **DRUCE**.

190/13. A. FIRMA Buser. Cauldron Snout, Durham, 1884, H. T. **MENNELL**. See C. E. **SALMON** in *Journ. Bot.*, 16, 1929.

190/18. A. ARGENTEA G. Don. (CONJUNCTA Bab.). Ingleton, M.W. Yorks, 1882, J. **WATKINS** in *Hb. Brit. Mus.*; Rydal Mount, Westmorland, Rev. **STILLINGFLEET** in *Hb. C. Bailey*; Ullswater, J. **WALTON** in *Hb. A. W. Bennett*; Gatesgarth, Cumberland, 1844, **BORRER**; Mael Gredha, Mid-Perth, Dr **HUGHES** in *Hb. F. Bossey*; roadside near Thurso Cemetery,

Caithness, adventive, C. E. SALMON in *Journ. Bot.*, 16, 1929. It was discovered in a slightly different part of Glen Doll, Clova, this year by Mr FOGGITT, where I saw it in July. This is very near Don's original locality.

191/1. AGRIMONIA EUPATORIA L., var. UMBROSA Coss. & Germ. (SEPIUM Bréb.). Saccombe Pond, Herts, 1929 [n. 800], LITTLE.

191/2. A. ODORATA Mill. Black Down, W. Sussex. In *A. Eupatoria* the buds are nearly flat-topped, whereas in *odorata* the short mucrones of the sepals unite to form a little point—a character which Drabble thinks works, and which Salmon says works " nine times out of ten and then fails," LITTLE.

193/2. POTERIUM POLYGAMUM W. & K. Hillside, Southport, L. Lancs, HOLDER and WAGSTAFFE.

194/6. ROSA CANINA L., var. SPHAERICA (Gren.) Dum. Marlborough, Wilts, Mrs WEDGWOOD.

194/10. R. DUMETORUM Thuill. Marlborough, Wilts, Mrs WEDGWOOD.
Var. URBICA Leman. Marlborough, Wilts, Mrs WEDGWOOD.
Var. SEMIGLABRA (Rip.). Marlborough, Wilts, Mrs WEDGWOOD.

194/12. R. GLAUCA Vill., var. SUBCRISTATA, f. MYRIODONTA W.-Dod. Rackwick, Hoy, JOHNSTON in *Trans. Bot. Soc. Edin.*

†195/2. PYRUS COMMUNIS L. On an old disused track, Cotgrave, Notts, BULLEY; Wilts, Miss TODD.

*195/13. P. ARIA Ehrh. Cefullys, Radnor, in plenty, WEBB.

195/14. P. LATIFOLIA Syme, var. DECIPIENS (Bechst.). N. Devon, Rev. H. H. HARVEY. [[illegible] MSS [illegible]]

196/1. CRATAEGUS MONOGYNA Jacq., var. nov. GRACILIPES. Hoveton, Norfolk, Miss TODD. Calyx and tube glabrous; leaves narrow and gracile, with seven narrow segments which are gradually narrowed into a somewhat long recurved apex, DRUCE.
Var. GLABRATA Sonder. Hale, S. Lancs, TRAVIS.
×OXYACANTHOIDES. Ippolyt's Brook, Hitchin, Herts. First observed in May. Styles one or two. Leaves partly with lateral nerves out-turned, partly in-turned, dark green and more like *Oxyacanthoides* in the mainly ternate lobing. Early partial glabrescence on peduncle and calyx, but traces of pubescence still remaining. Fruit large, 12 mm. long × 10 mm. broad, LITTLE.

†197/2. COTONEASTER MICROPHYLLUS Wallich. On the limestone cliffs of Cleeve Hill, Cheltenham, E. Gloster, GUY H. HOLLAND; Gwyrch,

Denbigh, DALLMAN in *N.W. Nat.*, 73, 1929. I saw it there over 60 years ago.

*199/3. SAXIFRAGA SPONHEMICA Gmel. Fforest Fawr, Carmarthen; Cwm Taf Fawr, Brecon. MARKS, ex WEBB.

199/19. S. RIVULARIS L. Ben More, Mid-Perth, C. V. MARQUAND.

†200/1. TELLIMA GRANDIFLORA Br. Alien, N.W. America. Wild in Devon, Dr VOELEKER in *Journ. Hort. Soc.*, xxvi., 1928.

†207/1. RIBES UVA-CRISPA L. Fruit glabrous. Side of stream, Hungerford, Berks, Miss TODD.

211/1. SEDUM PURPUREUM Link. Near Trelleck, Monmouth, C. AMHERST.

†211/3. S. REFLEXUM L. Abundant on a wall on a roadside near Cirencester, E. Gloster, DRUCE; *Duhonw Rocks, Brecon, WEBB.

214/1. HIPPURIS VULGARIS L. Tregaron Bog, Cardigan, WEBB. Queried by Dr Salter.

217/5. CALLITRICHE PEDUNCULATA DC. Leckwith Moor, Glamorgan, Miss VACHELL.

220/1. EPILOBIUM ANGUSTIFOLIUM L. Saunton, N. Devon, DRUCE. To remove ? in *Top. Bot.*

220/3. E. HIRSUTUM L. Burn of Geo Firth, Orkney [4111], JOHNSTON.

Var. VILLOSISSIMUM Koch. Braunton, N. Devon, September 1929, DRUCE.

×MONTANUM = ERRONEUM Haussk. Waste ground, Cardiff, Glamorgan, Miss VACHELL. The flowers are large as in *hirsutum*, but the leaves are much like *montanum*.

×PARVIFLORUM = INTERMEDIUM Reichb. Highbridge, N. Somerset, July 1929, DRUCE.

220/6. E. LAMYI F. Schultz. Garden ground, Welwyn, Herts, T. B. BLOW. Agreed to by Dr DRABBLE.

220/8. E. ROSEUM Schreber. A lax form at Glasbury, Radnor, DRUCE.

†220/15. E. NUMMULARIFOLIUM R. Cunn. By the side of a burn just below Allcock Farm, Grasmere, Westmorland, LOUIS BAKER.

†223/7. OENOTHERA SINUATA L. Burton-on-Trent, Staffs, DRUCE.

225/3. CIRCAEA ALPINA L. Side of Wye, Brecon, Miss DIANA CATOR.

*232/1. BRYONIA DIOICA Jacq. Cyro, Radnor, WEBB.

239/1. ERYNGIUM CAMPESTRE L. This has greatly increased on Scotney Down, near Winchester, and it was a remarkable sight last summer. Its discoverer there, Simon Baring, has just started for New Zealand where we hope other discoveries await him.—DRUCE. *Eryngium campestre* L. is recorded as native in the *Supplement of the Hants Flora* from two stations, one in each vice-county. It is also recorded as a native for N. Hants, v.-c. 12, in the second *Supplement to Topographical Botany*, from the Hon. Mrs Guy Baring's station, but in my opinion the plant is certainly not native in the other. It occurs in patches over several acres of a grass field and it is evidently thriving and increasing. The field looks to me like one which was arable and laid down to a sainfoin ley many years ago. The composition of the herbage is quite different to that of the virgin down nearby on which the *Eryngium* does not occur.—P. M. HALL.

†240/1. ASTRANTIA MAJOR L. Hedgerow plant near Stalham, Norfolk, Rev. E. C. CRUTWELL.

*244/1. SMYRNIUM OLUSATRUM L. Sennybridge, Brecon, WEBB.

†245/3. BUPLEURUM ROTUNDIFOLIUM L. Burton-on-Trent, Staffs, DRUCE and CURTIS.

245/5. B. TENUISSIMUM L. River Bure, Yarmouth, Norfolk (though reported extinct), E. A. ELLIS.

†245/6. B. LANCIFOLIUM Hornem. Tiverton, Devon, Col. WATTS; Splott, Cardiff, Glamorgan, R. L. SMITH.

†250/1. CARUM CARVI L. Muir of Ord, E. Ross, J. R. MATHESON in *N.W. Nat.*, 24, 1929.

†252/1. PRIONITIS FALCARIA (L.) Dum. Badsey, Worcestershire, known for the past 70 years, but unidentified, CARLETON REA.

253/2. SIUM ERECTUM Huds. Ditch between Winchelsea and Rye, E. Sussex, E. E. JENNER. A curious monstrosity—a "hen and chicken" variety.

255/2. PIMPINELLA SAXIFRAGA L., var. POTERIIFOLIA (Wallr.) Koch. Lambridge Wood, Oxon, July 1929, Mrs WEDGWOOD.

265/3. OENANTHE CROCATA L., var. TENUIFOLIOLATA Druce. Freshfield, S. Lancs, HOLDER, v.sp.

266/1. AETHUSA CYNAPIUM L., var. AGRESTIS Wallr. Aynhoe, Northants, and Oxon, September 1929, DRUCE. Specimens distributed this year.

*276/3. PEUCEDANUM SATIVUM (L.) B. & H. Abundant between Askham and Furness, v.-c. 69. WEBB.

†276/4. P. (ANETHUM) GRAVEOLENS L. Belford, Northumberland. GAMBIER-PARRY.

†276/5. P. OSTRUTHIUM Koch. Carrston Mill Burn, Stromness, Orkney [3979]. JOHNSTON in *Trans. Bot. Soc. Edin.* His No. 3402 was *Heracleum*.

†277/1. HERACLEUM MANTEGAZZIANUM S. & L. Hay, Brecon, WEBB; Mells, Somerset, DRUCE; Wilcot, Oxon, DRUCE.

277/2. H. SPHONDYLIUM L., var. ANGUSTIFOLIUM Huds. Helston, Cornwall, July 1929, DRUCE.

283/5. CAUCALIS NODOSA Scop., var. PEDUNCULATA (R. & F.) Dr. Chalk Hill, near Luton, Beds, 1838, *Hb. Luton*.

†283/8. C. LATIFOLIA L. Lockerly, Hants, Miss SALMON; railway ballast at Eckington, Worcester, CARLETON REA; Burton-on-Trent, beautiful specimens, DRUCE.

284/1. HEDERA HELIX L., var. BOREALIS Druce. Woody Bay, N. Devon, September 1929, DRUCE.

Var. SARNIENSIS Druce. Woody Bay, N. Devon; Bosahan, Cornwall, DRUCE. Forma VARIEGATA. Lynton, N. Devon, DRUCE.

287/3. SAMBUCUS EBULUS L. Llanfairfechan, Carnarvon, BRITTON; Bolton-on-Dearne, S.W. Yorks, H. G. PAYNE, see *N.W. Nat.*, 24, 1929; Godrergraig, Glamorgan; Llandovery, Carmarthen, WEBB. [At Kythraea, new to Cyprus, DRUCE.]

†292/1. LEYCESTERIA FORMOSA Wallich. Quite naturalised about Woody Bay, N. Devon, September 1929, DRUCE.

296/3. GALIUM ERECTUM Huds. Cheddar, N. Somerset; Yarnton, Oxon, DRUCE.

300/1. SHERARDIA ARVENSIS L., var. OVATA Fisch.-Benz. Micheldever, Hants, Col. PAYNE; Lostock, Lancs, MASON.

304/2. VALERIANELLA ERIOCARPA Desv. Budleigh Salterton, S. Devon, Major ORME in *Devon Tr.*, 81-92, 1928; Splott, Cardiff, Glamorgan, R. L. SMITH.

308/4. SCABIOSA SUCCISA L., f. NANA. Bude, Cornwall, MASON.

310/1. EUPATORIUM CANNABINUM L., var. SUBINTEGER Druce. Ditches near Deal, E. Kent, 1921, FOX.

312/1. SOLIDAGO VIRGAUREA L., sub-var. ACUTIFOLIA Dr. Mickle Fea, Hoy, Orkney; Silda Wick, Wick of Tresta, Fetlar, Zetland, JOHNSTON.

Var. LANCEOLATA Dr. Runcat Gill, Hoy, JOHNSTON; Watersmeet, N. Devon, DRUCE.

Var. INTERRUPTA Dr. Hunter's Inn, N. Devon; Boughrood, Radnor, DRUCE.

†312/3. S. LANCEOLATA L. Abbotsbury, Dorset, Sir M. ABBOT ANDERSON.

†312/5. S. SEROTINA Ait. Near Inkpen, Berks, HURST; Brackley, Northants, DRUCE. Distributed this year.

326/1. ANTENNARIA DIOICA (L.) Gaertn., forma ROSEA. Cornwall, Miss CLARICE VIVIAN and DRUCE; Balnaboth, Angus, DRUCE. Deep rose-pink flowers.

333/1. INULA HELENIUM L. By the river-side in Upper Wharfedale, a good bed, with many flowers, J. FRANKLAND.

†339/3. AMBROSIA ARTEMISIFOLIA L. Near St Michael on Wyre, Garstang, Lancs, The Ven. Archdeacon HORNBY.

†341/1. XANTHIUM SPINOSUM L. Wool alien, Great Wymondley, Herts, LITTLE.

†347/13. HELIANTHUS DIFFUSUS Sims. (RIGIDUS). Waste ground, Ascot, Berks, October 1929, DRUCE.

†354/1. GALINSOGA PARVIFLORA Cav. In a yard at Beckenham, Kent, PAYNE.

†355/2. MADIA SATIVA Molina. Garden week, Finstown, Orkney, JOHNSTON in *Trans. Bot. Soc. Edin.*

†356/1. HEMIZONIA PUNGENS T. & G. On ballast, Hythe, Kent, Miss C. M. GIBBINGS.

†362/2. TAGETES MINUTA L. Potato field, Skipwith, Yorks, DRUCE.

365/1. ACHILLEA MILLEFOLIUM L., var. CONSPICUA Druce. Riever, N. Wilts; Boughrood, Radnor; Burton-on-Trent, Derby; Market Harborough, Leicester; Barnstable, N. Devon, DRUCE.

†368/1. ANTHEMIS COTULA L. Alien, Stromness, Orkney [4125], JOHNSTON.

†370/8. CHRYSANTHEMUM MAXIMUM DC. Alien, Pyrenees, etc. Burton-on-Trent, Staffs, DRUCE.

†370/17. C. CORONARIUM L. Purwell Field, Hitchin, Herts, LITTLE; South Molton Railway, N. Devon, DRUCE.

†372/1. COTULA AUREA Loefl. Alien, Mediterranean. Burton-on-Trent, Staffs, DRUCE, teste FRASER.

†380/2. PETASITES ALBUS (L.) Gaertn. Naturalised at Balnaboth, Angus, Lady ELPHINSTONE and DRUCE.

†*380/3. P. FRAGRANS Presl. Hay, Brecon, WEBB.

†383/1. SENECIO SARRACENICUS L. Side of stream, Ashford, Steep, S. Hants, F. R. BROWNING, see *Fl. Hampshire*; by river below Enniskerry, Co. Wicklow, Major ORME, *in litt.*

383/3. S. AQUATICUS Hill, forma. Pixey Mead, Oxon, July 1929, DRUCE. Conspicuous from its sub-simple growth and large flowers. Distributed this year.

*383/4. S. ERRATICUS Bert. Freshwater, Isle of Wight, E. DRABBLE in *Journ. Bot.*, 42, 1929.

383/6. S. ERUCIFOLIUS L., var. DISCOIDEUS Dr. Par Harbour, Cornwall, 1929, MEDLIN.

383/7. S. SQUALIDUS L. Hitchin, Herts, H. PHILIPS.
Var. LEIOCARPUS Dr. Near Diss, Norfolk, Miss DIANA CATOR.

†383/8. S. VISCOSUS L. On railway tip, Hitchin, Herts, LITTLE; Coniston, Furness, WEBB.

383/32. S. INTEGRIFOLIUS (L.) Clairv. (CAMPESTRIS DC.). Galley Hill, Stopsley, Beds, 1929. Saunders' *Field Fl. of Beds* says "apparently limited to the Lower Chalk escarpment." Galley Hill is mainly Middle Chalk, and I believe a small portion rises above the Chalk Rock, *i.e.*, is Upper Chalk, LITTLE.

†385/2. CALENDULA ARVENSIS L. Burton-on-Trent, Staffs, DRUCE and CURTIS; South Molton, N. Devon, DRUCE.

393/1. ARCTIUM LAPPA L. (MAJUS Bernh.). My first record for the Lea basin. I have only one for the Iver basin—Purwell, Hitchin, Herts, 1924-7, and believe it rare for the district, LITTLE.

393/2. A. NEMOROSUM Lej. Braunton, N. Devon, DRUCE.

395/2. CARDUUS ACANTHOIDES L. Tenby, Pembroke [12], Miss TODD.

×NUTANS = NEWBOULDII Wats. Burton-on-Trent, Derby; Long Melford, W. Suffolk, July 1929, DRUCE.

†395/3. C. PYCNOCEPHALUS L., var. TENUIFLORUS (Curt.). Near Wymondley, Herts, in field dressed with shoddy, Mrs MACALISTER HALL; a nearly glabrous form, Burton-on-Trent, Staffs, DRUCE.

396/1. CIRSIUM ERIOPHORUM Scop. A photograph of a specimen, seven feet high, growing in Mr F. J. Hanbury's garden at Brockhurst, is given on p. 401 of the *Gardeners' Chronicle* for November.

396/8. C. ARVENSE × PALUSTRE = MIXTUM Druce. Par, Cornwall, MEDLIN, ex THURSTON.

396/9. C. PALUSTRE Scop. A form with the middle leaf lobe much prolonged (5 inches), Hoveton, Norfolk, Miss TODD.

†397/1. ONOPORDON ACANTHIUM L. Braunton Burrows, N. Devon, DRUCE.

†397/2. O. TAURICUM Willd. Burton-on-Trent, Staffs, DRUCE.

†397/3. O. ILLYRICUM L., var. MACRANTHUM Boiss. Garden, Aberfeldy, Mid-Perth, Miss M. S. CAMPBELL.

*405/7. CENTAUREA PRATENSIS Thuill. Towersey, Bucks, MASON.

405/8. C. OBSCURA Jord. Highbridge, Somerset; Hunter's Inn, N. Devon, DRUCE.

405/11. C. NEMORALIS Jord. High Force, Durham, v.-c., 66; Winch Bridge, N.W. Yorks, v.-c. 64, DRUCE; Geo Firth, Orkney, JOHNSTON in *Trans. Bot. Soc. Edin.*

Forma RADIATA. Trelleck, Monmouth, AMHERST.

†405/31. C. SOLSTITIALIS L. Puttenham, Surrey, CLARKE; near Wilbury Hill, Herts, BRUNT; near Walsworth, Herts, LITTLE; Torquay, Devon, Miss C. E. LARTER; Martin's Mere, Southport, Lancs, HOLDER and WAGSTAFFE.

†405/32. C. MELITENSIS L. Walsworth, Hitchin, Herts, LITTLE.

†405/37. C. SALMANTICA L. Weed, Nottingham, 1929, BULLEY; Burton-on-Trent, Staffs, DRUCE.

†407/1. CARTHAMUS LANATUS L. Hitchin, Herts, HUGH PHILIPS.

†407/3. C. TINCTORIUS L. Swanage, Dorset [41], Miss TODD; Kennington, Berks, DRUCE.

*416/2. CREPIS PALUDOSA Moench. Llanbister, Radnor, WEBB.

416/4. C. NICAEENSIS Balb. Thanks to Mr Flintoff's kindness, Major LAWSON sent me most beautiful specimens last June from Burton

Agnes, York. It grew in great quantity and luxuriance, up to four feet high, and averaging three and a half feet. Many had from 20 to 30 fully expanded large flowers. It grew on a piece of waste land which 40 years ago was consecrated for a cemetery, but this part has never been utilised.—DRUCE.

416/5. C. CAPILLARIS (L.) Wallr., var. ANGLICA Dr. & Thell. Turleton, S. Lancs, HOLDER; Malvern Station, Worcester; Ledbury, Hereford; Market Harborough, Leicester; South Molton, N. Devon, DRUCE; Barlow, Derby, E. DRABBLE.

†419/6. HIERACIUM PRAEALTUM Vill. Hungerford Railway, HURST and DRUCE; Hanslope, Bucks, DRUCE.

Var. BAUHINI Koch. Railway, Great Bedwyn, Wilts, HURST and DRUCE, to note their persistence. On a "Hieracium" standard, *Bauhini* should be kept as a species.

†419/7. H. STOLONIFLORUM W. & K. Railway Bank near Hanslope, Bucks, spreading freely, and known as growing there for over twenty years, DRUCE. Specimens now distributed.

†419/8. H. AURANTIACUM L. (N.P.). Budleigh Salterton, S. Devon, Major ORME, *in litt.*

†419/9. H. CLAROPURPUREUM N. P. Great Orme, Carnarvon, JOHN CRIPPS; in considerable quantity by the railway at South Molton, N. Devon (specimens distributed this year), and in still greater abundance on the railway banks near Barnstable, where it was recorded some years ago, DRUCE; near Southwick, Brighton, Sussex, E. PAYNE.

419/169. H. PORRIGENS Almq. Watersmeet, N. Devon, September 1929, DRUCE.

†419/187. H. PULMONARIOIDES Vill. Completely naturalised, and in great quantity, on many walls in the village of Mells, N. Somerset, and on the Bridge in hundreds, spreading into the Iron valley where it grows on some of the ruined buildings. It makes a splendid show. I notice *H. amplexicaule* is recorded for Mells by Marshall, and the record probably refers to this handsome species: indeed the name was corrected. How it reached this place is a difficult question to answer. I do not remember noticing it when I visited Mells many years ago, but that was not at the flowering period. Specimens are distributed this year, DRUCE.

419/241. H. UMBELLATUM L., ? var. CORONOPIFOLIUM Bernh. In 1924 I gathered it in an old gravel pit at Ickleford, near the Midland Railway, and again on August 5, 1929. It is the only station known to me in N. Herts. The nearest locality is at Maulden, Beds, on greensand. I think it may possibly have arrived along the railway from the north, LITTLE.

422/1. LEONTODON HISPIDUS L., var. SORDIDUS Bab. West Burn of Houbie, Fetlar, JOHNSTON.

Var. SIMPLEX Duby. Moo Wick, Fetlar, JOHNSTON.

With rather more entire leaves, on the magnesian limestone north of Castle Eden Dene, Durham, T. ASHTON LOFTHOUSE.

(TARAXACA all named by Dr H. Dahlstedt.)

423/1. TARAXACUM BRACHYGLOSSUM D. Yardley Gobion, Northants; Burton, Staffs; Dawlish, S. Devon, DRUCE.

423/2. T. DECIPIENS Raunk. A form related to this at Holton Pits, Oxon; Freshwater, Isle of Wight, DRUCE.

423/4. T. FULVUM Raunk. Penzance, Cornwall; Pershore, Worcester, DRUCE; Ganavan, Argyll, Mrs MACALISTER HALL.

Nov. var. vel species, Nisishee, S. Harris, 1928, DRUCE.

423/5. T. GLAUCINUM D. Heath and Reach, Beds, DRUCE.

423/6. T. LACISTOPHYLLUM D. Lizard, Cornwall; Sheepstead, Berks; Bosahan, Cornwall; Byfleet, Surrey; Tusmore, Stanton St John, Oxon; Riever, N. Wilts; Hinksey, Frilford, Berks; Evesham, Worcester, DRUCE.

423/10(2). T. RUBICUNDUM D. Allied to this species, Great Malvern Station, Worcester, DRUCE.

423/17. T. BRITANNICUM D. Steeple Aston, Oxon. (modif.); [a small form, probably this, Majorca], DRUCE.

423/21. T. DEVIANS D. Freshwater, Isle of Wight (modif.); Wytham, Berks, DRUCE. Previously only known from the Orkneys.

423/23. T. FAROENSE D. Ganavan, Argyll, Mrs MACALISTER HALL; Blackdown, W. Sussex, Preb. R. J. BURDON; Winch Bridge, Durham, Mrs WEDGWOOD; Cronkley, N.W. Yorks, DRUCE.

423/25(2). T. LANDMARKII D. Ganavan, Argyll, Mrs MACALISTER HALL; Wytham, Berks; "seems to be this," North Aston, Oxon, DRUCE. Previously only known from Zetland.

423/27. T. NAEVOSIFORME D. High Force, Durham; Killarney, Co. Kerry, DRUCE.

423/28. T. NAEVOSUM D. Bradenham, Bucks; Bracknell, Berks; Roundstone, Co. Galway (modif.), DRUCE.

423/29. T. NORDSTEDTII D. Ganavan, Argyll, Mrs MACALISTER HALL; probably a form of this, Yarnton Meadows, Oxon, DRUCE.

423/36. T. ADIANTIFRONS Ekm., forma. Tarbert, Harris, 1928, DRUCE.

423/37. T. ALATUM Lindb. Ham, Northants, with forma; Shefford Woodlands, Berks; Elsfield, Oxon; Evesham, Worcester, DRUCE.

423/45. T. BIFORME D. A plant resembling this to some degree, Carnsore, Wexford, 1928, DRUCE.

423/46(2). T. CAPHOCENTRUM D. Seems to be this, railway by Notley Abbey, Bucks, DRUCE.

423/51. T. DAHLSTEDTII Lindb. Northleigh, Oxon (probably a form); Tubney Wood, Berks; Ledbury, Hereford; Ivinghoe, Bucks, DRUCE.

423/52. T. DILATATUM Lindb. Tintern, Monmouth (perhaps this), AMHERST.

423/55. T. EXPALLIDIFORME D. North Aston, Oxon (modif.); Ivinghoe, Bucks, seems to be this, DRUCE.

423/61. T. HAMATUM Raunk. Bosahan, Helston, Cornwall (modif.); Ham, Northants; Byfleet, Surrey; Little Bedwyn, N. Wilts; Shefford. Sheepstead, Riever, Berks; Ivinghoe, Bucks; Stansteadbury, Herts; Ledbury, Hereford, DRUCE.

423/64. T. KJELLMANII D. Byfleet, Surrey, DRUCE.

423/72. T. LONGISQUAMEUM Lindb. Railway by Notley, Bucks; Kingsey, Oxon, DRUCE.

423/78. T. PERLACINIATUM D. Byfleet, Surrey; Old Marston, Oxon, as forma; a strict form, Northleigh, Oxon, DRUCE.

423/80. T. POLYODON D. Avonmouth, W. Gloster, a small form, Miss I. M. ROPER; Ivinghoe, Bucks, DRUCE.

423/83. T. SEMIPRIVUM D. Yardley Gobion, Northants, DRUCE.

423/83(2). T. SILESIANUM D. Husinish, Harris (modif.), DRUCE.

423/84(2). T. STENACRUM D. Ventnor, Isle of Wight, DRUCE.

423/84(3). T. STENOGLOSSUM D. Byfleet, Surrey; The Parks, Oxford, DRUCE.

423/84(6). T. SUBLAETICOLOR D. Yarnton, Oxon, DRUCE.

423/88. T. UNGUILOBUM D. Ganavan, Argyll, Mrs MACALISTER HALL.

427/3. Sonchus asper Hill, var. integrifolius Lej. Trewsbury, Gloster; Barnstable, N. Devon; Burton-on-Trent, Derby, Druce; Spital, Derby, E. Drabble.

Var. pungens Bisch. Trewsbury, Gloster, Druce.

427/4. S. oleraceus L., var. triangularis Wallr. Spital, Derby, E. Drabble; Market Harborough, Leicester; Trewsbury, Gloster, Druce.

Var. ciliatus (Lam.) Dr. Rack Wick, Hoy, 1928 [4032], Johnston.

Var. integrifolius Wallr. Lant Lane, Tansley, Derby, E. Drabble.

428/1. Tragopogon porrifolius × pratensis, var. minor. Waste ground, Yarmouth, E. Norfolk, with both parents. Some of the hybrids produced seeds, which have been sown, E. A. Ellis.

†431/4. Lobelia debilis L. f. Waste place, Beaulieu, S. Hants, Grierson.

†431/5. L. natalensis A. DC. Martin Mere, S. Lancs, A. G. Langdon and Holder.

432/1. Jasione montana L., var. appr. littoralis Fries. South portion of Yell, Zetland, S. R. Douglas.

435/3. Campanula Trachelium L., var. urticifolia Lej. & Court., teste Fraser. Mells, N. Somerset. The leaves are narrower and more sharply cut than the common plant, Druce.

†435/4. C. Rapunculoides L. In sainfoin near High Down, Herts, Little; Lathkil Dale, Derby, E. Drabble.

†435/6. C. persicifolia L. From a rough pasture near the Golf Links, Budleigh Salterton, S. Devon, flowering very freely, Major Orme.

436/2. Legousia Speculum-Veneris (L.) Fisch. Near Brandon, Norfolk, Miss Drummond.

438/2. ×Vaccinium intermedium Ruthe. East Moor, Derby, seen there for more than 15 years, but it does not form fruit, E. Drabble.

439/1. Oxycoccus Oxycoccus (L.). Dunkery Beacon, S. Somerset, Major Orme.

446/7. Erica vagans L., var. kevernensis Turrill. Lizard Down, Cornwall, 1929, R. Kempthorne.

456/1. Hypopitys Hypopitys (L.) Dr. Sledmere, E. Yorks, Miss E. M. Morehouse in *N.W. Nat.*, 24, 1929.

†462/1. Cyclamen hederifolium Ait. Roadside, Pennington, S. Hants, Rayner; two plants (adventive) on a wild part of Cerby Moor,

860 feet, A. W. Bartlett in *Vasculum*, 1928. Another result of the teaching of Mr Hewlett and other weak members of his cult.

463/1. Lysimachia thyrsiflora L. Sent by Miss Violet Willan, who found it in great quantity on the edge of a pond at Burley Ringwood, S. Hants. Although the occupiers of the Manor have lived there many years, they know it has not been planted there in their time. It may be rememberd that it also grows round the ornamental waters at Bulstrode, Bucks, but there we have evidence that it was introduced by the Duchess of Portland. The flowers in the Hants specimens were remarkable fine.—Druce.

†463/3. L. punctata L. Quite naturalised at Court-yr-Ala, Glamorgan, Miss Vachell.

†467/2. Anagallis arvensis L. Flower-border, Brough Lodge, Fetlar, Zetland, Johnston.

473/2. Vinca minor L. Lake Woodford, Wilts; Ammanford, Carmarthen, Webb.

478/1. Centaurium Centaurium (L.) Dr. Braunton, N. Devon, Druce. No personal authority in *Top. Bot.*

Var. elliticum Druce. Ainsdale Dunes, S. Lancs, Holder.

478/4. C. pulchellum Druce. Braunton Burrows, N. Devon, September 1929, Druce.

480/4. Gentiana Amarella L., var. multicaulis (Lange) Druce. On Braunton Burrows, N. Devon, September 1929. Growing in almost globular tufts of dense, dark purple flowers, Druce.

480/5. G. septentrionalis Druce. Tresta, Fetlar, Mo Ness, Orkney [4252], Johnston in *Trans. Bot. Soc. Edin.*

480/9. G. campestris L., with var. alba. Woody Bay, N. Devon, 1929, Druce.

Var. baltica (Murb.). Braunton Burrows, N. Devon, Druce. It has been reported from about Morthoe, etc., Devon, by Miss C. E. Larter.

†485/2. Gilia capitata Sims. Aldridge Station, Staffs, Curtis.

†486/1. Polemonium caeruleum L. Alder plantation near Weir, between Tonbridge and Penshurst, Kent, 1879 (? seed, water borne). Little.

†488/1. Phacelia tanacetifolia Benth. Burton-on-Trent, Staffs, 1929, Druce.

†490/2. Omphalodes Omphalodes (L.) Druce. In great quantity (acres) in a wood near Treiorwerth, Holyhead, Lady Kathleen Stanley.

†493/3. Lappula Lappula (L.) Dr. Burton-on-Trent, Staffs; Didcot, Berks; South Molton Railway, N. Devon, Druce; Worcester, Carleton Rea.

†494/1. Asperugo procumbens L. Cherry Hinton, Cambs, Hon. Mrs Adeane; Splott, Cardiff, Glamorgan, R. L. Smith.

†496/2. Benthamia (Amsinckia) lycopsioides Lehm. Horsey Mere, Norfolk, A. W. G. Alston.

†496/4. B. intermedia (F. & M.) Dr. Burton-on-Trent, Staffs, Druce.

†496/5. B. Menziesii (Lehm.) Dr. Cornfields near Boston, Lincs, 1929, S. J. Hurst.

†497/1. Symphytum officinale × peregrinum = caeruleum Pitm. Ashbourne, Wilts, Miss Todd.

†500/4. Anchusa ochroleuca M. Bieb. With 500/2. A. officinalis L. and 500/7. A. azurea Mill. etc. Hayle, Cornwall. Shown to me by Mr Rees.

†504/1. Alkanna lutea A. DC. Burton-on-Trent, Staffs, Druce.

506/1. Myosotis palustris Hill, var. strigulosa Reichb. Evie, Orkney [B.905], Johnston.

†509/2. Echium plantagineum L. Pentewan, Thurston; Helstone, Cornwall, Tresidder.

517/1. Solanum Dulcamara L., var. villosissimum Desv. (tomentosum Koch). Overmoyne, Dorset, Miss Todd, teste Dr Polgar.

517/2. S. nigrum L., ad var. atriplicifolium vergens. Iver, Bucks, Druce, teste Dr Polgar.

†517/7. S. rostratum Dunal. Near Bexhill, E. Sussex, Miss Alice Cole.

517/9. S. triflorum Nutt. Par, Cornwall, 1927, Medlin, teste Dr Polgar.

517/17. S. Sarrachoides Sendt. Avonmouth, W. Gloster, White, as *atriplicifolium*; Dagenham, Essex, 1927, Druce and Melville, teste Dr Polgar.

†518/2. Physalis angulata L. Wool alien, Wymondley, Herts, Little.

*521/1. ATROPA BELLADONNA L. Canal-side, Abercrave, Brecon, C. MARKS.

†525/1. NICOTIANA RUSTICA L. Tiverton, Devon, Col. WATTS.

†527/1. VERBASCUM PHLOMOIDES L. Purwell-field, Hitchin, Herts, LITTLE, teste FRASER. This has been named *V. longifolia* at Kew.

†527/11. V. SINUATUM L. Waste ground near Hayle, W. Cornwall, DRUCE.

†527/12. V. SPECIOSUM Schrad. Burton-on-Trent, Staffs, DRUCE.

†528/1. CELSIA CRETICA L. Owslebury, S. Hants, RAYNER.

532/1. LINARIA LINARIA (L.) Karst., var. LATIFOLIA (Bab.) Dr. Exmouth, S. Devon, Major ORME, *in litt.*
×REPENS. Tintern, Monmouth. AMHERST.

†532/10. L. DALMATICA Mill. Birkdale Sandhills. S. Lancs, J. D. MASSEY and W. G. TRAVIS.

532/26. L. CYMBALARIA Mill. Notes on Introduction and Distribution in Scotland, H. BOYD WATT in *Trans. Bot. Soc. Edin.*, 124, 1929. The first Scottish record, T. HOPKIRK, *Flora Glottiana*, 1813, from Bothwell Castle, on the Clyde.

†535/1. SCROPHULARIA VERNALIS L. Wollaton Park, Notts, BULLEY.

535/4. S. NODOSA L., var. BRACTEATA Dr. Giants Causeway, Miss ROPER in *Ir. Nat.*, 166, 1929.

†537/1. MIMULUS GUTTATUS DC. Ditch at Tintern, Monmouth, AMHERST.

†537/2. M. MOSCHATUS Dougl. Pond-side, Tintern, Monmouth, AMHERST; Plymbridge, Devon, in secluded creeks, GAMBIER-PARRY.

†541/2. DIGITALIS GRANDIFLORA Mill. (AMBIGUA Murr.). Railway bank, Shawford, S. Hants, RAYNER.

†542/1. ERINUS ALPINUS L. Berkeley Castle, W. Gloster; Windsor Castle, Berks, spreading well (seeds sown by Lord Stamfordham): limestone rocks along the Leet, Flint, and limestone rocks near Gwrych, Denbigh, DALLMAN in *N.W. Nat.*, 73, 1929. Mr J. D. MASSEY (*N.W. Nat.*, 136, 1929) writes that the Leet specimens of *Erinus* owe their origin to seeds sown there by a resident.

543/4. VERONICA CHAMAEDRYS L., var. LAMIIFOLIA (Hayne) Beck. Culeaze, Dorset, DRUCE; Spital, Derby, E. DRABBLE.

543/6. V. SCUTELLATA L., var. VILLOSA Schum. Trelleck, Monmouth, with the type, AMHERST.

(VERONICAS named by C. E. Britton.)

543/8. V. ANAGALLIS-AQUATICA L. Mells, N. Somerset, DRUCE.

Var. DIVARICATA (Kroesche). Wolvercote, Wendlebury, Oxon, DRUCE.

Var. AMBIGUA (Kroesche). Ballyvaughan, Co. Clare; Tenby, Pembroke, Miss TODD; Lechlade, Gloster; Southport, S. Lancs, DRUCE.

Var. (state) ULVACEA Hausm. Isle of Wight, F. STRATTON in *Hb. Druce*.

543/9. V. AQUATICA Bernh. Braunton, N. Devon; Burnham, N. Somerset; Binsey, Oxon, DRUCE.

543/18. V. TOURNEFORTII Gmel. (PERSICA), var. CORRENSIANA (E. Lehm.). Swaythling, S. Hants, RAYNER; Dunbar, Haddington, Miss TODD; Braunton, N. Devon; Highbridge, N. Somerset; Henley, Oxon; Byfleet, Surrey; Riever, N. Wilts; St Anne's, N. Lancs; Helstone, W. Cornwall; Burton-on-Trent, Derby, DRUCE; Hook, Surrey [3463], BRITTON.

543/20. V. DIDYMA Ten. (POLITA Fr.), var. THELLUNGIANA (Lehm.). Towersey, Bucks, MASON.

†543/22. V. LONGIFOLIA L. Waste ground, Grandpont, Oxon, 1929, DRUCE.

545/2. EUPHRASIA BOREALIS Wetts. Specimens labelled *minima* from Northdale, Fetlar, Zetland [321], LUMB suggests are *borealis*, as are others from the same place labelled *scotica* [355] and *minima* [4242] from Runcat Gill, Hoy, Orkney, all gathered by JOHNSTON.

Var. PUBESCENS Towns. Fetlar, Zetland, JOHNSTON.

545/3. E. BREVIPILA B. & G. Co. Clare, P. B. O'KELLY.

545/5. E. NEMOROSA Pers. Braunton, N. Devon, practically glabrous leaf surface, marginal setae few; Binsey, Oxon, DRUCE.

545/16. E. SCOTICA Wettst. Ward Hill, Hoy, Orkney; Corbie Head, Fetlar, Zetland [342], JOHNSTON.

545/19. E. ROSTKOVIANA Hayne was growing abundantly on heathy land of the Sussex Weald at Ebernoe, and in less quantity in a field nearer (W.) Parkhurst House. As I have quite failed to find it in the Iver district of N. Herts, the thought suggests itself that as I have never seen it on chalk, here or elsewhere, the explanation may be that it has a preference for more acid soils. I do not, however, remember to have seen developed anywhere the question of soil-preferences for the micro-species of *Euphrasia*. *E. nemorosa* grows indifferently upon chalk or weald, basic or acid, LITTLE; Trelleck Bog, Monmouth, AMHERST; Kings Nympton, N. Devon, DRUCE.

545/20. E. VIGURSII Davey, var. PALLENS Buckn. Ventongimps, Cornwall, RILSTONE, ex THURSTON. New to England.

545/21. E. KERNERI Wettst. South Molton, N. Devon, DRUCE; Offley, Herts, HUGH PHILIPS.

548/6. RHINANTHUS MONTICOLA (Stern.) Dr. Tresta, Fetlar, Zetland, 1929, JOHNSTON; probably this at Blackhead, Co. Clare, 1928, DRUCE.

549/4. MELAMPYRUM PRATENSE L., var. HIANS Druce. Woody Bay, N. Devon, DRUCE.

550/4. OROBANCHE MAJOR L., var. CITRINA Druce. Biddesden, S. Wilts, DRUCE.

550/10. O. MINOR Sm. (probably). On Japanese Primula, Cardiff, Glamorgan, Miss VACHELL.

553/1. PINGUICULA GRANDIFLORA × VULGARIS = SCULLYI Druce. Near Muckross, Co. Kerry, W. D. MILLER.

*553/2. P. VULGARIS L., ? var. ALPICOLA Reichb. Miss HILDA SALMON reports that she saw on Macleod's Tables, Skye, a large-flowered *Pinguicula* which at first she thought was *grandiflora*, but the capsule was the same as *vulgaris*. "The flowers were larger and flatter, and had a large white blotch in the throat." Unfortunately no specimen was kept, but the description recalls the plant I got in W. Ross which I identified as above, DRUCE.

†555/1. LIPPIA NODIFLORA Michx. Near Southport, S. Lancs, ex Mrs FOGGITT.

556/1. VERBENA OFFICINALIS L. Side of Wye, Tintern, Monmouth, AMHERST.

558/1. MENTHA ROTUNDIFOLIA Huds. On a "tip," Southport, S. Lancs, HOLDER and WAGSTAFFE.

†558/4. M. SPICATA L. Beaulieu, S. Hants, H. PHILIPS.

558/6. M. PIPERITA L. Fyvie, N. Aberdeen, Rev. F. TURREFF; *Inverary, Argyll, WEBB.

Var. SUBCORDATA Fraser. Glasbury, Radnor, 1929, DRUCE.

558/7. M. AQUATICA L., var. MAJOR Sole. Watford, Northants; Castle Howard, Yorks; Three Cocks, Radnor (f. CANA, teste FRASER), DRUCE; Foxcote, E. Gloster, L. ABELL.

Var. ACUTA Briq. Aberthin, Glamorgan, DRUCE.

558/9. M. VERTICILLATA L., var. RIVALIS Briq. Skipwith, Yorks, DRUCE.
Var. OVALIFOLIA (Opiz) Briq. Glen Prosen, Angus, DRUCE.

558/12. ×M. RUBRA Sm. Ascot, Berks, DRUCE.

558/13. M. ARVENSIS L., f. HIRTIPES, teste FRASER. Thrupp, Oxon; Beauly, S. Hants, DRUCE.
Var. NUMMULARIA (Schreb.). Byfield, Northants, DRUCE.

559/1. LYCOPUS EUROPAEUS L., var. GLABRESCENS Schmideley. Boughrood, Radnor, DRUCE.

(THYMUS.—Determined by Dr K. Ronniger.)

561/1. THYMUS PULEGIOIDES L. Stow Wood, Oxon; Harleston, Northants, DRUCE.

561/2. T. GLABER Mill. (CHAMAEDRYS Fr.). Stow Wood, Oxon, DRUCE.
Forma GRACILICAULIS Ronniger. Frilford Golf Course, Berks; Pool Bottom, Oxon, DRUCE.

561/4. T. SERPYLLUM L., f. ERICOIDES W. & G. High Force, Durham, DRUCE.

561/8. T. DRUCEI Ronn. Inchdowrie, Angus, DRUCE.

561/10. T. NEGLECTUS Ronn. Newtimber, Sussex, DRUCE.

561/11. T. BRITANNICUS Ronn. Braunton, N. Devon; Porne, Cheddar, N. Somerset; Blackland, N. Wilts; Scotney, N. Hants; Pool Bottom, Oxon; Sapperton, E. Gloster, DRUCE; Portrush, Antrim, Miss I. M. ROPER in *Ir. Nat.*, 167, 1929.

†562/2. SATUREIA MONTANA L. Medina, Isle of Wight, LONG.

†565/1. MELISSA OFFICINALIS L. Between Tonbridge and Yalding, near the River Medway, Kent, 1879, recorded as *Melittis*, LITTLE.

†566/7. SALVIA AETHIOPIS L. St Agnes, Cornwall, THURSTON.

†566/15. S. HORMINUM L. Hightown, S. Lancs, J. D. MASSEY.

569/1. NEPETA CATARIA L. Braunton, N. Devon, DRUCE. Personal authority needed in *Top. Bot.*

†570/3. DRACOCEPHALUM PARVIFLORUM Nuttall. Burton-on-Trent, Staffs, July 1929, DRUCE; Clitheroe, Lancs, J. FRANKLAND.

†571/2. LALLEMANTIA IBERICA F. & M. Burton-on-Trent, Staffs, DRUCE and CURTIS.

†575/1. SIDERITIS MONTANA L. Burton-on-Trent, Staffs, DRUCE.

576/1. MARRUBIUM VULGARE L. Rhosilly, Glamorgan, Hon. Mrs A. LEITH.

577/4. STACHYS AMBIGUA Sm. Field near Parkhurst House, W. Sussex, 1929, LITTLE, confirmed by DRABBLE.

577/13. S. OFFICINALIS (L.) Trevis. I wish to report the occurrence of an abnormal strain which has obtained a fairly firm hold on a bank for 100 yards or more. The fundamental tendency is towards a three-symmetric form. Three leaves at each node, hexagonal stem, leaf system decussate.

The following forms intermediate between the symmetrical form and the type occur as well:—(1) Two of the leaves at a node smaller than the third. (2) One of the leaves at a two-node deeply bifid. (3) Above a normal two-node occurs a pseudonode, with a single leaf and a flower in the axis. The stem is bent at the pseudonode. It is not an artefact due to the other leaf being torn off. Specimens could be sent to anyone interested.—R. KEMPTHORNE.

578/1. GALEOPSIS SPECIOSA Mill. Castle Sheriff, York, with Mr and Mrs FOGGITT, August 1929, DRUCE; Nant Einion, Llanwrddyn, Montgomery, Major ORME.

578/4. G. LADANUM L., var. CANESCENS auct. = SERICEA Dr. Barry, Glamorgan, Miss VACHELL.

†581/2. LAMIUM MACULATUM L. On a grassy bank near the Three Cocks, Radnor, DRUCE. This is the plant from Goodleigh, N. Devon, recorded in *Journ. Bot.*, 150, 1929, as *molluccellifolium*. That *maculatum* and not *amplexicaule* or *hybridum* was the plant observed shows what glaring mistakes can be made.

581/3. L. PURPUREUM L., near var. LUMBII Dr. Isle of Wight, LONG.

581/4. L. HYBRIDUM Vill., var. DECIPIENS Sonder. Newcastle, Co. Down, Miss I. M. ROPER in *Ir. Nat.*, 168, 1929.

583/1. BALLOTA NIGRA L. Near Clapham, Yorks. First record from this part of Yorks, J. FRANKLAND.

Var. MOLLISSIMA Druce. Burton-on-Trent, Staffs, 1929, DRUCE.

†587/3. AJUGA GENEVENSIS L. Hayle, W. Cornwall, pointed out by Mr REES. It was in beautiful flower in the grassy dune. The flowering spikes were erect.—DRUCE.

†588/1. Plantago indica L. Swanage Gas Works [40], Miss Todd; sea wall, Hook, S. Hants, P. M. Hall.

588/8. P. lanceolata L., var. elliptica Dr. Sea front, Walton, Penzance, Cornwall, 1929, Druce.

Var. altissima L. Ascot, Berks, Druce.

588/9. P. media L., var. lanceolatiformis Dr. Near Andoversford, E. Gloster, July 1929, Druce.

593/4. Herniaria cinerea L. Splott, Cardiff, Glamorgan, R. L. Smith.

†596/6. Amarantus retroflexus L. Hull, Yorks, Waterfall, teste Aellen; Ware, Herts, Druce.

†596/11. A. angustifolius L. Dagenham, Essex [2712], Melville, teste Aellen.

600/1. Chenopodium rubrum L. Braunton, South Molton, N. Devon, Druce.

Var. Blitoides Wallr. Disused canal, Derby, A. R. S. Proctor; Byfield Reservoir, Northants; Clattercut, Oxon, Druce.

Var. spathulatum Rouy. Byfield, Northants; Clattercut, Oxon, Druce.

600/4. C. hybridum L. Croughton, Northants, Hon. Mrs G. Baring and Druce.

600/6. C. murale L. Beaulieu, S. Hants, Grierson.

†600/7. C. opulifolium Schrad. Avonmouth, W. Gloster [7], C. Sandwith and J. Gibbons.

600/8. C. album L., var. subficifolium Murr. Galashiels, Selkirk; Hovingham, N. Yorks; Kennington, Berks; Didcot, Berks (forma farinosa); Skipwith, N. Yorks, teste Murr, with var. serratifrons Murr, Druce.

Var. lanceolatiforme Murr. Wellingborough, Northants; Walsall, Staffs; Selkirk; Oxford [7654]; Bradford, Yorks, Druce; Acton, Middlesex, *Hb. Druce*, teste Aellen; Avonmouth, W. Gloster [34], C. Sandwith and J. Gibbons.

Var. viride L. Wrentham, E. Suffolk; Bristol [34], W. Gloster; Dundee, Angus; Oxford; Sark, Druce.

Var. pedunculare Bertol. Hovingham, N. Yorks, August 1929, Druce.

Var. paucidens Murr. Towersey, Bucks, Mason.

Var. Borbasiforme Murr. Avonmouth, W. Gloster, C. Sandwith.

Var. Pseudo-Borbasii Murr. Marston, Oxon; St Neots, Hunts, 1913, Druce, teste Aellen.

Var. SERRATO-SINUATUM Murr. Hovingham, N. Yorks; Highbridge, N. Somerset; Marston, Oxon, DRUCE.

×OPULIFOLIUM, b. PLATANOIDES (Scholz). Burton-on-Trent, Staffs; Hovingham, N. Yorks, DRUCE.

×ZSCHACKEI = SUBCUNEATUM Murr. Par, Cornwall; Billingshurst, Sussex; Pyrford, Surrey; Rugeley, Staffs; Dingley, Northants; Colchester, N. Essex; North Berwick, Haddington; Botley, Oxon, DRUCE, teste AELLEN.

†600/9. C. BORBASII Murr. Colchester, N. Essex, BROWN; Burton-on-Trent, Staffs; Galashiels, Selkirk, DRUCE.

†600/11. C. LEPTOPHYLLUM (Nutt.) Brit. Spital, Derby, DRABBLE.

600/12. C. FICIFOLIUM Sm. Avonmouth, W. Gloster [21], C. SANDWITH.

Var. MICROPHYLLUM Murr. Farmyard, Clapton Court, N. Somerset, WHITE.

†600/13. C. GLAUCUM L. Cresswell, Northumberland, 1887, H. E. FOX, as *Pseudo-Botryodes*.

†600/19. C. BOTRYS L. Calow, Derby, DRABBLE.

†600/21. C. HIRCINUM Schrad., var. DIMINUTUM Ludwg. Avonmouth, W. Gloster, C. SANDWITH and J. GIBBONS; Byfleet, Surrey, August 1918, DRUCE, teste AELLEN.

†600/23. C. BERLANDIERI Moq., var. PLATYPHYLLUM Issler. Symonds Yat, W. Gloster, September 1929, DRUCE, teste MURR.

†600/24. C. ZSCHACKEI Murr, sub-sp. BERLANDIERI Murr. Southport, S. Lancs, J. D. MASSEY; Avonmouth, W. Gloster [8], C. SANDWITH; Skipwith, N. Yorks; Ware, Herts; Billingshurst, Sussex; Par, Cornwall, 1909; Southport, S. Lancs; Botley, Oxon, DRUCE.

†600/30. C. QUINOA Willd. Selkirk [1175] and Galashields, DRUCE and Miss I. M. HAYWARD, teste AELLEN.

606/3. ATRIPLEX PATULA L., var. BRACTEATA Westerl. Reservoir, Clattercut, Oxon; Byfield, Northants, DRUCE; Launcells, N. Cornwall, MASON; Witley, Surrey, GERALD ASH.

606/6. A. DELTOIDEA Bab. Bagshot, Wilts, Miss TODD.

†607/1. AXYRIS AMARANTOIDES L. Hovingham, N. Yorks, DRUCE.

†613/1. SALSOLA KALI L. Near Raynes Park, Surrey, BRITTON.

Var. TRAGUS (L.). Ascot, Berks, October 1929, DRUCE and Lady DAVY.

615/2. POLYGONUM CONVOLVULUS L., var. SUBALATUM Lej. & Court. Kings Nympton, N. Devon, DRUCE.

615/3. P. BISTORTA L. Not native, Millfield, Newburgh, Stromness, Orkney [394], JOHNSTON.

615/7. P. PERSICARIA L., var. MACULIS-INSIGNIS Danser. Clattercut, Oxon; Byfield, Northants, DRUCE.
Var. ELATUM Gren. & Godr. Clattercut, Oxon; Byfield, Northants, DRUCE.

615/10. P. MITE Schrank. Canal near Chesterfield, Derby, DRABBLE.

†615/31. P. POLYSTACHYUM Wallich. In great abundance near Woody Bay, and in many places along the railway from Barnstable to Lynton, N. Devon, thoroughly established and spreading, DRUCE.

†615/32. P. CUSPIDATUM Sieb. & Zucc. Near Pimlico, Clitheroe, Lancs, J. FRANKLAND; Barnstable, N. Devon, DRUCE.

†615/33. P. SACHALINENSE Schmidt. Countess Wear, D'URBAN in *Devon Tr.*, 93, 1929.

618/6. RUMEX OBTUSIFOLIUS × PULCHER = OGULINENSIS Borbas. West Tofts, Norfolk, LITTLE. Sp. non vidi.

618/13. R. MARITIMUS L. In immense quantity in its old habitat at Binsey, Oxon, from which it had almost disappeared. It was also plentiful at Skipwith, Yorks, and at Boarstall, Bucks, DRUCE.

†618/17. R. SCUTATUS L. Limestone walls at Allithwaite Lake, Lancs, WEBB.

†618/19. R. SALICIFOLIUS Weinm. Didcot, Berks; Burton-on-Trent, Staffs, 1929, DRUCE.

†618/20. R. PATIENTIA L. Burton-on-Trent, Staffs, DRUCE and CURTIS.

†618/24. R. CUNEIFOLIUS Campd. Braunton Burrows, N. Devon, Dr WRIGHT, ex W. D. MILLER.

†618/29. R. OBOVATUS Danser. Sandpits, Ham, Surrey, 1929, Mrs WEDGWOOD.

†618/29(2). R. PARAGUAYENSIS Parodi. Alien, Brackenbridge, near Glasgow, Lanark, GRIERSON. " More like *paraguayensis* than *obovatus*." —DANSER.

*621/1. ASARUM EUROPAEUM L. Merrilands Farm, Corscombe, near Evershot, Dorset, C. J. TROYLE-BULLOCK, *in litt.* Found by a schoolgirl.

†622/2. ARISTOLOCHIA ROTUNDA L. Still flowering in Surrey. H. J. BURKILL.

623/2. DAPHNE MEZEREUM L. Bramdean Common, Hants, Hon. Mrs CHAPMAN, ex RAYNER.

626/1. VISCUM ALBUM L., on *Morus alba*. In a garden near Ross, Hereford, Miss ARMITAGE in *Journ. Bot.*, 283, 1929. On *Populus* at Cranborne, Dorset, and Wilts.

†628/9. EUPHORBIA VIRGATA W. & K. Morn Hill, Winchester, Hants, Miss WHALE, ex RAYNER; Sacombe, Herts, LITTLE.

633/4. ULMUS PLOTII Druce. There is at Albury, E. Herts, and again at Furneux Pelham and Little Hormead, a good deal of what I believe is *U. Plotii*. The region is poor boulder clay. On boulder clay at Eltisley, Cambs, in the spring, I saw trees with neither flower nor leaf which, by their fine branching, I suspect were the same. As they were in a wood, the latter might be a natural station.—LITTLE.

†634/1. HUMULUS LUPULUS L. Barren specimen in grassy ditch-side, Firth, Orkney, JOHNSTON in *Trans. Bot. Soc. Edin.*

†635/1. CANNABIS SATIVA L. St Peter's Port, Guernsey, 1929, Mrs HICHENS.

637/1. URTICA DIOICA L., var. HOLOSERICEA Fries, or near it. Tarbert, Harris, 1928, DRUCE.

†639/1. HELXINE SOLEIROLII Req. Haslemere, Surrey, growing under a holly hedge, Miss M. DRUMMOND.

644/1. CARPINUS BETULUS L. Alburgh, Norfolk, MASON.

646/2. QUERCUS SESSILIFLORA Salisb. Tintern, Monmouth, AMHERST; Woody Bay, N. Devon, DRUCE.

†650/2. SALIX FRAGILIS L. Planted specimens at Redland Burn, Firth, Orkney, JOHNSTON in *Trans. Bot. Soc. Edin.*

(SALICES named by J. Fraser.)

650/3. S. ALBA L., var. STENOPHYLLA Fraser. Weston-super-Mare, N. Somerset, DRUCE.

Var. CAERULEA (Sm.). Andoversford, E. Gloster, L. ABELL; Trewsbury, E. Gloster, DRUCE.

× FRAGILIS = VIRIDIS Fries. Kidlington, Oxon, DRUCE.

650/5. S. PURPUREA L., f. HELIX (Sm.). Bulwell, Notts, BULLEY.

650/8. S. CAPREA × CINEREA = REICHARDTII A. Kern. Pegal Burn, Orkney, JOHNSTON in *Trans. Bot. Soc. Edin.*

×VIMINALIS = MOLLISSIMA Sm. (non Willd.). Oxford Parks, DRUCE; Redland, Orkney, planted, JOHNSTON in *Trans. Bot. Soc. Edin.*

650/9. S. AURITA × CINEREA = S. LUTESCENS A. Kern. Weston-super-Mare, N. Somerset, DRUCE.
×CAPREA = CAPREOLA J. Kern. Weston-super-Mare, N. Somerset, DRUCE.
×PHYLICIFOLIA = LUDIFICANS F. B. W. Burn of Dullant, Fetlar, Zetland, a planted shrub, JOHNSTON.
×REPENS=AMBIGUA (Ehrh). Hoy, Orkney [3958 and 3808], JOHNSTON.
×REPENS, f. INCUBACEA (L.). Cava, Orkney [3948], JOHNSTON.
×VIMINALIS = FRUTICOSA Döll. Peakirk, Northants, DRUCE; †Layland, Orkney, a single plant, not native, JOHNSTON.

650/10. S. CINEREA L., var. OLEIFOLIA (Sm.). Tyndrum, Mid-Perth, DRUCE; Redland Burn, Firth, Orkney, JOHNSTON.

650/11. S. REPENS L., var. INCUBACEA (L.). Bank of Quoys, Hoy, Orkney, 1928 [3821], JOHNSTON.
Forma LEIOCARPA. Cava, Orkney, JOHNSTON.

650/13. S. PHYLICIFOLIA × REPENS = SCHRADERIANA Willd. Birsay, Orkney [4217], JOHNSTON.

651/3. POPULUS NIGRA L. Castle Howard, Yorks, DRUCE.

663/2. LISTERA CORDATA (L.) Br. Brockenhurst, S. Hants, R. FINDLAY. See *Gard. Chron.*, 164, 1929.

664/1. SPIRANTHES AESTIVALIS (Lam.) Rich. Six plants, five of which were flowering, were seen in the "old" station on July 28. These were actually in a part of the bog in which I had not previously seen the plant. On August 6, thirty-five plants, all in flower but two, were seen in the "new" station. A total of 41 plants leads one to hope that this plant is in better care than Mr Rayner's *Supplement to the Hampshire Flora* might suggest. The plants in the "new" station were particularly luxuriant and more healthy in appearance than those in the "old" station, P. M. HALL.

667/3. CEPHALANTHERA LONGIFOLIA (Huds.) Fritsch. Glenasmae, Co. Dublin, A. W. STELFOX in *Ir. Nat.*, 247, 1929.

668/4. HELLEBORINE PURPURATA (Sm.) Dr. Near Folkestone, Kent, H. WALKER.

669/7. ORCHIS INCARNATA L., var. PULCHRIOR Druce. Sapcote, Leicester, BEMROSE.
×PURPURELLA. Hewing Firth, Pomona, Orkney, JOHNSTON.

669/8. O. PRAETERMISSA Druce. The droughty year was very inimicable to this orchid which was either very small or non-existent in its accustomed habitats. Walworth, Herts, 1838, *Hb. Luton*; Weston-super-Mare, N. Somerset, DRUCE; Rammey Marsh, Middlesex [3475], BRITTON.

Var. PULCHELLA Druce. On a hill above Barmouth, Merioneth, 400 ft. alt., CHESTER, growing with *O. maculata* and *Habenaria virescens*; Giant's Causeway, Antrim, J. LAMB.

669/10. O. MACULATA L. Barmouth, Merioneth, CHESTER; Ballyvaughan, Co. Clare, O'KELLY; Bodmin Moor, Cornwall, THURSTON.

669/11. O. FUCHSII Druce, forma PURPUREA. Ballyvaughan, Co. Clare, O'KELLY; Hitchin, Herts, 1838, *Hb. Luton*.

*669/18. O. HIRCINA Crantz. One plant near Salmonby, N. Lincoln, found by Miss JOAN GIBBONS in June 1929. A welcome New County Record. I saw it in N. Somerset this year, DRUCE.

672/4. OPHRYS TROLLII Heg. & Heer. Caesar's Camp, near Folkestone, E. Kent, H. WALKER, but not a good example as the second and third flowers were almost devoid of a lip.

672/5. O. MUSCIFERA Huds. A plant of this was found by Sir ARTHUR HORT and his son in the Hanger Wood, Hurstbourne Tarrant, Hants. It measured 26½ inches high, had ten flowers, eight of which were out, and two in bud.

674/1. HABENARIA GYMNADENIA Druce, var. ALBIFLORA. Caesar's Camp, near Folkestone, E. Kent, H. WALKER.

674/4. H. VIRIDIS (L.) Br., var. VAILLANTII (Ten.) Fernald. Goathland, Yorks, FLINTOFF; Limbury, Beds, 1833, *Hb. Luton*.

674/6. H. VIRESCENS Druce. A specimen, with 50 flowers, found in a wood near Broadway, Gloster, Miss MILVAIN in *Wild Fl. Mag.*

674/7. H. BIFOLIA (L.) Br. Asham Wood, Mells, N. Somerset, DRUCE.

678/1. CROCUS NUDIFLORUS Sm. Still exists in the classic locality near Warwick where Mr BOLTON KING showed it me. Two specimens were found by Mr E. PAYNE in †Sussex in October 1929.

678/2. C. VERNUS (L.) All. In a meadow at Ash, Kent, C. BAKER.

†683/1. TRITONIA CROCOSMIFLORA Nich. Woody Bay, etc., naturalised in several places about Lynmouth, N. Devon, DRUCE; Newcastle, Co. Down, J. LAMB.

†684/1. NARCISSUS LOBULARIS Haworth. Plentiful, Whitland, Carmarthen, WEBB.

†684/3. N. BIFLORUS Curtis. Heath, Beds, 1929, DRUCE; hundreds of plants near Red Wharf Bay, Anglesey, Hon. Mrs GUY BARING; Copeland Islands, at Donaghadee, Co. Down, F. STOREY.

684/4. 'N. POETICUS L. In the dunes near Hayle, Cornwall, DRUCE.

684/8. N. BARRII Hort. (N. INCOMPARABILIS × POETICUS). Field near Marston, Berks, a relic of cultivation, DRUCE.

691/2. POLYGONATUM MULTIFLORUM (L.) All. Penniwinkle Thaw, near Leigh, Kent, 1879, LITTLE, and specimen in Herb.

†698/2. ASPHODELUS TENUIFOLIUS Cav. Saltney, Flint, J. P. D. THOMAS; by the railway, South Molton, N. Devon; Didcot, Berks; Burton-on-Trent, Staffs, DRUCE. Mr DALLMAN (*N.W. Nat.*, 194, 1929) records *A. fistulosus* from a garden at Adwick-on-Dearne, S.W. Yorks, found by Miss E. CRAMPHORN, introduced with fowl corn. Is it certain that the plant is not *tenuifolius*?

702/3. ALLIUM SCORODOPRASUM L. Grange-over-Sands, Lancs, A. TURNER.

702/4. A. VINEALE L., var. BULBIFERUM Syme. Falmouth, Cornwall, TRESIDDER, ex THURSTON.

†704/1. HYACINTHUS COMOSUS L. Langton Matravers, Dorset, ex Hon. Mrs G. BARING; Ainsdale Dunes, S. Lancs, HOLDER and WAGSTAFFE; near Derby, A. R. S. PROCTOR.

†708/2. LILIUM PYRENAICUM Gouan. Fruiting freely in its classic habitat, N. Devon, in September last. A fasciated example was also seen, DRUCE.

709/1. FRITILLARIA MELEAGRIS L. Alburgh, Norfolk; Homersfield, Suffolk, MASON.

†718/16. JUNCUS TENUIS Willd. Plymbridge, S. Devon, GAMBIER-PARRY.

718/23. J. TRIFIDUS L. Cul Beag, W. Ross, alt. 2523 feet, Hon. Mrs CAMPBELL.

719/1. JUNCOIDES SYLVATICUM (Huds.) Dr., var. GRACILE (Rostr.) Groves. Tintern, Monmouth, AMHERST.

*†719/9. J. NEMOROSUM Morong, var. RUBELLUM (Hoppe) Dr. Balnaboth, Angus, in considerable quantity about the Lodge, DRUCE. Specimens are distributed.

721/1. TYPHA LATIFOLIA L. Braunton, N. Devon, DRUCE.

721/2. T. ANGUSTIFOLIA L. Abundant and fruiting freely by the canal, Market Harborough, Leicester, DRUCE.

722/1. SPARGANIUM NEGLECTUM Beeby [813] and fruits. "I send you specimens which represent our common plant. I cannot find *polyedrum* in this [Hertfordshire] district. You will see that the bases of the leaves are white—those in running water. In Purwell old mill lead, now silted up with 6 feet of mud, I got specimens with pink base to leaves, but they do not appear to be separable on that difference. I think Towndrow's note (*Rep. B.E.C.* 319, 1927) does not work. Drabble thought some of the pink-based ones might be *microcarpum* (with smaller fruits). The leaves of 813 are not conspicuously broad. Towndrow's remark that they are broader in *microcarpum* does not agree with Ascherson & Graebner who say that *microcarpum* is 'smaller in all its parts' than *neglectum*. And they add—" *S. neglectum* not infrequently bears fruiting heads (especially late blooms) whose fruits in no way differ from *microcarpum*.' "—J. E. LITTLE.

722/1. S. NEGLECTUM Beeby. Ippolyts Brook, Hitchin, Herts, LITTLE; Canal, Market Harborough, Leicester, DRUCE.

†724/1. ACORUS CALAMUS L. Flowering at Castle Howard, N. Yorks, August 1929, DRUCE.

727/3. LEMNA TRISULCA L. Holy Island, N. Northumberland, J. E. HULL in *Vasculum*, 99, 1928.

737/5. POTAMOGETON ALPINUS Balb., var. PALMERI Druce. Canal, Odiham, N. Hants, DRUCE. Mr ARTHUR BENNETT agreed to its varietal value.

737/11. ×P. NITENS Weber, var. ANGUSTIFOLIUS Ferber. Papil Water, Fetlar, Zetland, JOHNSTON. These leaf-forms of Pondweeds seem scarcely worth naming.

737/14. ×P. DECIPIENS Nolte. Canal, Market Harborough, Leicester, September 1929, DRUCE.

737/16. P. PERFOLIATUS L., var. OBLONGIFOLIUS M. & K. Loch of Une, Fetlar, Zetland, JOHNSTON.

737/28. P. PECTINATUS L. Pulborough, Sussex, Miss COTTES; Braunton, N. Devon, DRUCE.

737/30. P. FILIFORMIS Pers. Papil Water, Fetlar, Zetland, JOHNSTON.

*744/1. CYPERUS LONGUS L. Discovered in a marsh at Ascot, Berks, by the Rev. D. M. HEATH, 1929. I am pretty confident it was not there in the nineties, but since that date the area has been greatly altered by building operations. This plant grows for a short distance by and about a small stream and is completely naturalised, but I think it is not an indigenous species. It is new to Berkshire.—DRUCE; gully near Red Lodge Nursery, Bassett, S. Hants, PACK, ex RAYNER.

744/2. C. FUSCUS L. This was very plentiful on Dorney Common, Bucks, in 1929, DRUCE.

745/4. ELEOCHARIS ACICULARIS (L.) Br. Moon Green Reservoir, Notts, R. BULLEY.

746/2. SCIRPUS MARITIMUS L., var. CONGLOBATUS S. F. Gray. Braunton, N. Devon, DRUCE.

746/6. S. AMERICANUS Pers. Mr W. G. TRAVIS (*N.W. Nat.*, 175, 1929) says he found this in 1909 but he did not recognise it as that species and mislabelled it.

747/2. ERIOPHORUM ANGUSTIFOLIUM L., var. LONGIFOLIUM Hoppe. Birkdale, S. Lancs, HOLDER and WAGSTAFFE.

*747/3. E. GRACILE Roth. Hornstock, Northants, 1878. I think correctly named, DRUCE.

753/3. CAREX ACUTIFORMIS Ehrh., var. SPADICEA Roth. Between Elstead and Tilford, Surrey, 1899, E. S. MARSHALL, ex C. E. SALMON in *Journ. Bot.*, 336, 1929.

753/4. C. VESICARIA L. Caneston Bridge, Pembroke, Miss TODD.

753/5. C. GRAHAMI Boott. To this Dr Kükenthal assigns the plant sent by P. EWING to the *Wats. B.E.C.*, as *vesicaria*, var. *alpigena* Ewing, non Fries, ex C. E. SALMON in *Journ. Bot.*, 336, 1929.

753/6. C. SAXATILIS L. Ben More, Mid-Perth, 1910 [3481], E. S. MARSHALL. This is Mr Marshall's *Grahami* × *saxatilis*, but Dr Kükenthal fails to find its hybrid origin. That was my idea, and I have queried it in our List. C. E. SALMON, *l.c.*, 336, 1929.

753/7. C. INFLATA Huds. Burn of Funzie, Fetlar, Zetland [305], JOHNSTON.

Var. UTRICULATA (Boott) Dr. Moidart, Argyll, v.-c. 97, 1895. S. MACVICAR. See C. E. SALMON in *Journ. Bot.*, 336, 1929.

× VESICARIA = PANNEWITZIANA Fig. Marsh near River Derwent, N. of Keswick, Cumberland, C. E. SALMON, *l.c.*

753/10. C. PENDULA Huds. Tintern, Monmouth, AMHERST; Churchtown, S. Lancs, HOLDER and WAGSTAFFE.

753/12. C. strigosa Huds. Woodbury, S. Devon, Major Orme; already recorded from Bickington in that vice-county by Miss C. E. Larter.

753/16. C. Sadleri Linton. Loch Wharral, Clova, Forfar. Referred by Dr Kükenthal to *C. binervis*, var. *alpina* Drejer. C. E. Salmon in *Journ. Bot.*, 335, 1929.

*753/18. C. punctata Gaud. Aldeburgh, E. Suffolk, K. D. Little; det. J. E. Little.

753/19. C. fulva × Oederi. Loch Tummel Side, Mid-Perth, with ×*oedocarpa*, Druce; between Herston and Godlingston Farm, Dorset; Flegg Burgh Fen, etc., E. Norfolk, Salmon; Goathland, N.E. Yorks, Miss Mennell; Aysgarth, N.W. Yorks, 1916, Foggitt; Newton Regny, Cumberland, Wallis.
×Oederi. Bassenthwaite Lake, Cumberland, C. E. Salmon, *l.c.*, 335, 1929.

753/23. C. extensa Good. Southport, S. Lancs, Holder and Wagstaffe.

*753/31. C. tomentosa L. On the Middlesex side of the River Thames, nearly opposite the Surrey station, I. A. Williams in *Journ. Bot.*, 59, 1929.

753/33. C. diversicolor Cr., var. bulbosa Drejer. Thorpe Green, Surrey, C. E. Salmon in *Journ. Bot.*, 334, 1929.

753/36. C. panicea L. Dr Kükenthal (see *Journ. Bot.*, 335, 1929) says that the plant collected by Marshall near Fort William, 1888, is not *intermedia* Miég. I was of the same opinion, and it is queried in our List. He thinks it is forma humilis Meinsh.

*753/38. C. limosa L. Burn of Funzie, Fetlar, Zetland, Johnston.

753/45. C. elata All. St Leonards, E. Sussex, Fox Wilson, ex Salmon in *Journ. Bot.*, 333, 1929.
×gracilis = × C. Curtisii Druce in *Rep. B.E.C.*, 887, 1929. Near Thurne, E. Norfolk, 1902; Lizard Down, W. Cornwall, C. E. Salmon, *l.c.*

753/46. C. gracilis Curt., var. prolixa Fries. Muckhatch Farm, Thorpe, Surrey, C. E. Salmon, *l.c.*
Var. angustifolia Kük. Marshy wood near the River Wharfe, Ilkley, M.W. Yorks, A. Wilson in *Rep. B.E.C.*, 402, 1908, as *gracilescens*. This name was introduced by Arthur Bennett. In *Rep. B.E.C.*, 426, 1892, he says of certain specimens labelled *gracilis*, var. *gracilescens*, that they closely agree with specimens so named by Almquist. Kükenthal (*l.c.*) refers C. Waterfall's specimen sent to *Wats. B.E.C.* from edge of Avon, Tewkesbury, E. Gloster, as *gracilis* towards *prolixa*. The

referees, A. Bennett and E. S. Marshall, said it showed excellent evidence of *acutiformis* × *inflata*. Kükenthal says " certe *non* planta hybrida, sed *C. gracilis*.

753/47. C. AQUATICUS Wahl., var. VIRESCENS Anderss. Derwentwater, Cumberland, 1919, C. E. SALMON, *l.c.*, 334, 1929.

Var. SPHAGNOPHILA Fries. Above Glen Callater, S. Aberdeen, E. S. MARSHALL, 1892. Collected by me from that area in the eighties.

× RIGIDA ? [CONCOLOR]. Athol Forest, E. Perth, 2600 feet, E. S. MARSHALL [3575], who queried it as var. *epigeios*; Meall Odhar, Glas Maol, E. Perth, 2700 ft., SALMON, *l.c.* This is the var. *stans* Boott of my List.

753/49. C. GOODENOWII Gay. Mr C. E. SALMON (*Journ. Bot.*, 334, 1929) cites several formae under this species, and a queried hybrid with *C. gracilis* from marsh, Derwentwater, Cumberland, 1919, and from Llyn Padarn, Carnarvonshire, named by KUKENTHAL. Kükenthal so named several of my sedges from Scotland, etc., where *C. gracilis* is absent. I am inclined to think they come under var. STRICTIFORMIS Bailey. Var. RECTA is cited by C. E. SALMON (*l.c.*) from marsh near Lodore, Cumberland; Hawes Water, Westmorland; near Lewes, E. Sussex, and Loch Wharral, Angus.

753/53. C. LEPORINA L., var. ARGYROLOCHIN Koch. Portadown, Co. Armagh, Miss JEANNE W. WHITE.

753/55. × C. HELVOLA Blytt. Ben Lawers, Mid-Perth, DRUCE, attested by Dr KUKENTHAL. So far *Lachenalii* has not been recorded for the Breadalbanes.

753/57. × C. AXILLARIS Good. Between Buckman Corner and Bucks Green, Sussex, with its parents, Lady DAVY.

*753/58. C. CANESCENS L. Portadown, Co. Armagh, Miss JEANNE W. WHITE; Den of Dunkadale, Birsay, Orkney, rare [4219], JOHNSTON, as *echinata*.

Var. ROBUSTIOR Blytt. Mickle Fell, N.W. Yorks, 2400 feet, SALMON in *Journ. Bot.*, 333, 1929.

753/61. C. PAIRAEI F. Schultz. Santon Warren, Norfolk; Tiddenham and Cavenham, Suffolk, LITTLE.

753/62. C. DIVULSA Stokes. Wimbolsham, W. Norfolk, LITTLE, as *divulsa* × *contigua* (?); North Wootton, King's Lynn, Norfolk, C. P. VETCH, ex J. S. GILMOUR.

× REMOTA. Near Mayfield, E. Sussex, C. E. SALMON in *Journ. Bot.*, 140, 1925. Passed by KUKENTHAL, *l.c.*, 333, 1929. This is × C. EMMAE Gross.

*753/63. C. PANICULATA L. Burn of Funzie, Fetlar, Zetland, JOHNSTON in *Trans. Bot. Soc. Edin.*

†754/6. PANICUM COLONUM L. Bassett, S. Hants, PACK, ex RAYNER.

†754/8. P. CRUS-GALLI L. Yateley, N. Hants, MONCKTON.

758/3. SPARTINA TOWNSENDII Groves. A thousand roots have been planted on the foreshore of Canvey Island, Essex, in order to preserve the shore from erosion, *Gard. Chron.*, 236, 1929.

764/1. ORYZA ORYZOIDES (L.) Brand. Plentiful in a barren state by a stream near Brockenhurst, S. Hants, DRUCE and P. M. HALL.

†766/2. ANTHOXANTHUM ARISTATUM Boiss. Burton-on-Trent, Staffs, DRUCE. Distributed this year.

770/3. ALOPECURUS MYOSUROIDES Huds. South Molton, N. Devon; Aber, Carnarvon; Leith, Midlothian, DRUCE.

770/6. A. AEQUALIS Sobol. In immense quantity on the exposed mud of the reservoirs at Byfield, Northants, and Clattercut, Oxon, DRUCE. Specimens distributed this year.

777/1. PHLEUM PRATENSE L., var. INTERMEDIUM (Jord.). Near Leake, Notts, R. BULLEY.

780/2. AGROSTIS ALBA L., var. MARITIMA Meyer. Burnham, N. Somerset, July 1929, DRUCE.
Var. CONDENSATA Hackel. Balnaboth, Angus, DRUCE.

783/1. CALAMAGROSTIS EPIGEIOS (L.) Roth. By the Tyne near Hexham, Northumberland, Lady ALETHEA BUXTON.

785/1. APERA SPICA-VENTI (L.) Beauv. Burton-on-Trent, Staffs; Skipwith, Yorks, DRUCE; Newport, Isle of Wight, LONG.

790/1. WEINGAERTNERIA CANESCENS (L.) Bernh. See *B.E.C.*, 765, 1928, where it is added to the Lancashire Flora by Mr JUSTICE TALBOT. My friend, Mr F. W. Holder, who knows the country round Southport intimately, and who was for many years engaged in ornithological observations on the dunes, writes to me about the record as follows:—"I had not read the description [of the grass] with care until last week, and I felt sure that the grass was one I had described in my journal years ago, on May 4, 1919. 'On the slopes of one of these [high dunes] I came across a colony of hummocky grass covering a limited area. The grass had the hues of satin, and I cannot recollect another such colony on the dunes. In fact, the grass is of such a nature that the most casual of observers cannot pass without remarking on its unique situation on sandy ground.'" On September 11, 1929, Mr

Holder went straight to the locality and found the *Weingaertneria* just as he had described it ten years before. He found more on the adjacent sandhills. Mr Holder adds:—" I have mentioned this merely to afford evidence that the plant has been established at Formby for years—my note in no way deprives Mr Justice Talbot of a capital first record."

794/1. AVENA FATUA L., var. PILOSISSIMA S. F. Gray. South Molton, N. Devon, DRUCE.

794/2. A. PUBESCENS Hnds. Wick of Gruting, Fetlar, Zetland, JOHNSTON.

795/1. ARRHENATHERUM ELATIUS (L.) Mert. & Koch, var. BIARISTATUM (Peterm.) Dr. Lizard, Cornwall, L. B. HALL.

795/2. A. TUBEROSUM (Gilib.) Dr. Tintern, Monmouth, AMHERST.

†808/1. CYNOSURUS ECHINATUS L. Settle, Yorks, J. FRANKLAND.

809/1. KOELERIA GRACILIS Pers. W. Leake, Notts, R. BULLEY.

809/3. K. BRITANNICA (Domin). Budleigh Salterton, S. Devon, Major ORME; Blackland, Wilts, DRUCE.

819/1. DACTYLIS GLOMERATA L., forma VIVIPARA. A curious form is commented on (*Gard. Chron.*, 164) by W. B. TURRILL. It was found by Mr TRESIDDER at Pentewan, Cornwall.

†*824/1. POA CHAIXII Vill. Balnaboth, Angus, 1929, DRUCE.

824/2. P. PRATENSIS L., var. ANGUSTIFOLIA (L.). Railway bank, Winchester, S. Hants, DRUCE.

824/3. P. SUBCAERULEA Sm. Byfleet, Surrey, DRUCE.

†824/5. P. PALUSTRIS L. Southampton, Hants, Miss TODD; Didcot, Berks, DRUCE.

825/3. GLYCERIA PLICATA Fries, var. DECLINATA (Bréb.). Withyham, E. Sussex, Mr JUSTICE TALBOT.

825/4. GLYCERIA DISTANS Wahl. Under *Puccinellia distans*, Mr C. E. SALMON (*Journ. Bot.*, 243, 1929) says that some English specimens from Avonmouth Docks, J. W. WHITE, June 19, 1911, are the true *G. distans*, the Norge botanists keeping the *Poa retroflexa* of Curtis Fl. Lond. vi., t. 1, distinct. *G. distans* has a shorter lower glume, 1.5 mm.; upper, 2 mm. long; whereas in *retroflexa* both glumes are up to 3 mm. long, and they are more acute. He has *retroflexa* from near Ridge, Dorset; Lewes, Frog Firle, Litlington, E. Sussex, C. E. SALMON, and from Hull, S.E. Yorks, C. WATERFALL. Curtis's plate in *Fl. Lond.* lxi., was published before 1791 (not 1797 as given by Mr Salmon), and in the accompanying text it says he gathered it in 1786, among the grassy herbage on the right-hand side of the horse-road leading up to Hampstead in tolerable plenty. He holds it is a distinct species from *distans*. His drawing of the glume is more like *distans* than *retroflexa*. He says:—"The calyx A glume of two valves, the valves ovate, obtuse, hollow, unequal, one of them not more than half the length of the other.

*825/8. G. PROCUMBENS Dum. By the river about two miles from Stafford (brine baths are near), Mr JUSTICE TALBOT.

826/15. FESTUCA MEMBRANACEA (L.) Dr. Exmouth, S. Devon, Major ORME in *Devon Tr.*

†826/16. F. DANTHONII A. & G. Still at Burton-on-Trent, Staffs, 1929, DRUCE.

826/18. F. MYURUS L. Wareham, Winterborne Steepleton, Dorset; Highbridge, N. Somerset, DRUCE.

827/5. BROMUS MADRITENSIS L. Tenby, Pembroke, Miss TODD.

†827/10. B. MARGINATUS Nees. Dagenham, E. Essex, MELVILLE.

827/16. B. SECALINUS L. Kirby-le-Soken, N. Essex, DRUCE.

*827/19. B. BRITANNICUS I. A. Williams. (B. HORDEACEUS L., var. PSEUDO-RACEMOSUS Dr.). Fyvie, N. Aberdeen, Rev. F. TURREFF, as *pratensis*; Melmerby, Cumberland, MASON, too young for certainty; Killin, Mid-Perth, 1920 FRASER,; Glasgow, 1922, GRIERSON; Basildon, Riever, Berks; near Riever, Wilts; Middleton Park, Oxon; Louth, Lincoln; Culeaze, Dorset, too young for certainty; Erith, Kent; Chalfont, Bucks, 1905, as *leptostachys* Pers.; Wilsford, S. Wilts; Aberdeen, S. Aberdeen, DRUCE.

828/1. BRACHYPODIUM SYLVATICUM (Huds.) R. & S. Hoy, Orkney [4257], JOHNSTON.

828/2. B. PINNATUM (L.) Beauv., var. CORNICULATUM Bréb. Near Ampleforth, Yorks, 1929, DRUCE.

†829/2. LOLIUM TEMULENTUM L. Burton-on-Trent, Staffs, 1929, DRUCE.

830/1. AGROPYRON JUNCEUM Beauv. Burnham, N. Somerset, DRUCE. Var. MEGASTACHYUM (Fr.) Dr. Coast at Pembroke [17], Miss TODD; Redcar, Yorks, DRUCE.

830/4. A. REPENS L., var. LEERSIANUM S. F. Gray. Wiseman's Bridge, Pembroke, Miss TODD; Woody Bay, N. Devon; Burton-on-Trent, Derby, DRUCE.

†832/8. TRITICUM TRIUNCIALE (L.) Rasp. Burton-on-Trent, Staffs, DRUCE.

840/1. TAXUS BACCATA L. Woody Bay, N. Devon, DRUCE.

*844/1. EQUISETUM MAXIMUM Lam. Ilyon Valley, Radnor, WEBB.

844/2. ×E. LITORALE Kühl. Ballymena, Co. Antrim; Woodstock Demesne, Kilkenny; Friars Island, Limerick; Kilgoblin Castle, Co. Dublin, PRAEGER in *Ir. Nat.*, 191, 1929.

844/5. E. LIMOSUM L. Braunton, N. Devon, DRUCE.

857/4. CYSTOPTERIS FILIX-FRAGILIS (L.) Bernh. On masonry near Goathland, N. Yorks, F. DRUCE, ex R. J. FLINTOFF, who remarks that it is not recorded in District No. 4, the Esk area by J. G. Baker, so that this is the only known station in the Esk area. Probably it owes its origin to wind-blown spores.

858/1. POLYPODIUM VULGARE L., var. SERRATUM Milde. Castle Martyr, Co. Cork, 1928, DRUCE.

862/1. TRICHOMANES RADICANS Sw. Ox Mountain, Sligo, Miss R. L. PRAEGER in *Ir. Nat.*, 417, 1929.

†868/1. AZOLLA FILICULOIDES Lam. Pulborough, Sussex. Miss COTTES.

NOTES ON POTAMOGETON.

William Harrison Pearsall.

I. THE BRITISH GRASS-LEAVED SPECIES.

The plants usually included for convenience under this title are those given in *L.C.*, ed. 11, Nos. 1961 to 1969, and are merely an artificial group. All of them belong to the subgenus *Eupotamogeton* of Raunkiær (*De danske Blomsterplanters Naturhistorie* I., 1, 1896, 34, 108), but to different groups of it. The first two species—*P. zosterifolius* and *P. acutifolius*—belong to Hagström's *Compressi* (*Crit. Res.*, 1916, 64), and all the remaining species are included in Graebner's *Pusilli* (*Potamog.* in A. Engler, *Das Pflanzenreich*, 1907, 106). Hagström (*l.c.*, 74) considers *P. trichoides* to be more closely allied to the *Compressi* and therefore places it in the group next to that, the *Monogyni*, as the sole species. Most authorities, however, agree with Graebner's classification.

The *Pusilli* are divided by Hagström into two sections:—

I. *Pusilli connati* having sheathing stipules connate and ochreate—*P. Friesii*, *P. rutilus* and *P. panormitanus*.
II. *Pusilli convoluti* having sheathing stipules open and convolute—*P. obtusifolius*, *P. pusillus*, *P. Sturrockii* and the hybrid *P. franconicus* (*pusillus*×*trichoides*). We should also include here *P. trichoides*.

The *Pusilli connati* must not be confused with the same author's *Connati* (*P. filiformis* and its vars.), which is an entirely different group. The study of the stipules of the linear-leaved *Potamogeton* species has been much neglected in this country and the literature on the subject affords little assistance and is, indeed, in some instances quite misleading. On the other hand much has been written of the fruits, although the distinction afforded by them is usually of little use to the average collector even if he is fortunate enough to find them present.

In the *Pusilli* the stipules are of paramount diagnostic importance and they should always be carefully examined directly the plant is taken from the water and their character noted. They are normally boat-shaped scarious sheaths, very thin, transparent, whitish or brownish-white in colour and usually soon deciduous—decaying and falling after fulfilling their function of protecting the young shoots and leaves. Some are more persistent than others, but in most species it is generally possible to find well-formed stipules for study, if the bases of the young leaves and shoots are examined.

In the majority of the linear-leaved species of *Potamogeton* the stipules are very similar in shape to those of the larger species of the genus but much smaller in size. Normally they are split from top to bottom and although their margins often overlap at the base, they form a narrow V-shaped opening at the apex. The following species possess these open and convolute stipules:—*P. zosterifolius*, *P. acutifolius*, *P. obtusifolius*, *P. pusillus*, its sub-sp. *lacustris* and varieties, *P. Sturrockii*, *P. trichoides* and ×*P. franconicus*.

On the other hand 3 species—*P. Friesii*, *P. rutilus* and *P. panormitanus*—have stipules which are closed tubes for the greater part of their length, the margins having grown together and coalesced. There is usually a similar V-shaped opening at the apex, but it is comparable to that of a "woollen pullover" and is closed at the base. These tubular stipules are slightly wider above and, of course, ultimately split on one side with the increased growth of the leaves they contain (*P. Friesii* splits both back and front). They are then apt to be mistaken for the open convolute stipules previously described and hence the necessity for their examination while young. In the *Gramineæ* a similar distinction between an open and a closed ligule is often of great service in distinguishing genera—cf. the entire ligule of *Bromus*.

P. zosterifolius Schumacher, *Enumer. pl. Sæll* I., 1801, 50. *P. compressus* L. ap. Fries, *Nov. Fl. Suec.*, 1828, 44-46.

Stem broad, 3-6 mm., flattened, nearly winged and branched. Leaves similar, sessile, linear and grass-like, 10-20 cm. long × 2-4 mm. wide, very variable, usually abruptly pointed (rounded and cuspidate), occasionally somewhat acuminate and then resembling those of the next species. Commonly with 3 larger principal veins—5 in much branched robust plants—and very many fine parallel longitudinal intermediate ones. Stipules oblong, lower very obtuse and cuspidate, upper acuminate. Spikes many flowered, cylindric (1.5-3 cm. long), on stout peduncles usually 3-6 cm. in length but sometimes more. Fruit large (3.5-5 mm. long), obliquely obovoid, somewhat bluntly tricarinate, often with slight teeth on the back and a central beak. Often propagated by winter-buds which are larger and thicker than those of *P. acutifolius* and have "the inner leaves always ± (up to 10 mm.) surpassing the others, with free tips." In *P. acutifolius* the inner leaves do not usually protrude.

P. acutifolius Link, in Roemer and Schultes *Syst. Veget.*, III., 1818, 513. *P. cuspidatus* Schrader ap. Smith *Eng. Fl.* I., 1824, 234.

Stem narrower than in the preceding species and more flattened than that of any other species in the genus. Leaves linear, 5-13 cm. × 4 mm., very acute and finely acuminate with 3 principal veins and many fine parallel longitudinal intermediate ones. "At times the midrib is composed of many compacted ribs and translucent." Stipules nearly an inch long, persistent, acute and narrower than in the preceding species. Spikes ovate or globose, few-flowered (4-8), very short on short peduncles usually about 10 mm. but occasionally up to 36 mm. In this species the peduncle and spike are normally subequal. In *P. zosterifolius* the ped. is usually 2 or 3 times as long as the spike. Fruit large, 3-4 mm. long, compressed, semi-obovate, with ventral margin nearly straight, having a tooth near its base and a recurved beak near the apex. A much rarer species than the preceding. Hagström (*l.c.*, 69) states that the stem epidermis cells of *P. zosterifolius* are constantly short—1.5-3 times as long as broad—while those of *P. acutifolius* are constantly long --4-6 times (or more) longer than broad. The var. *major* Fieber, is a tall and robust plant with longer and wider leaves—often 15 cm. × 5 mm. —occasionally met with in this country.

P. obtusifolius Mertens and Koch, *Deutsch. Fl.*, 1823, 855. *P. gramineus* Smith, *Eng. Fl.*, 1828, 235.

Stem slender, slightly compressed, with rounded edges, longitudinal axis about twice the shorter one. Normally much branched even in deep water forms. Leaves linear, sessile, narrowed below, very slightly tapering at the apex, obtuse or rarely subacute, mucronate. Usually 3-nerved, often with 5, and Fieber (*Pot. Böhm.*, 1838) figures 7. Examples of the last have been seen from Arctic America. Hagström (*l.c.*, 116) says " The midrib and lateral nerves finally grow very faint and join in the very apex." This is misleading, as the lateral nerves commonly join the midrib well below the actual leaf-tip and make a strong curve before doing so. The leaves of this species lack the many fine parallel longitudinal veins of the 2 preceding species. Stipules small (13-20 mm.), unequal in length, open, very obtuse. Spike small, ovoid, continuous, dense-flowered, normally about as long as the rather slender peduncles which are very short as a rule (± 8 mm.) but in Hawes Water, N. Lancs, 36 mm. Fruits usually larger (3-3.5 mm.) than those of *P. pusillus* or *P. Friesii*, but occasionally smaller and then very similar to large fruits of *P. pusillus*, obliquely obovate, slightly compressed, convex ventrally, ± semicircular dorsally, not keeled when fresh but often 3-keeled when dry, with short beak. This species fruits more freely than any other linear-leaved species, producing 8-25 carpels, most of which mature. In the English lakes—as elsewhere—it frequently produces fertile fruits under water and it freely propagates by means of these.

P. Friesii Ruprecht, *Beitr. Pfl. d. Russ. Reiches*, 1845, 43. *P. mucronatus* Schrad. Asch. et Graeb. *Syn. Fl. Mitteleurop.*, 1893, 523. *P. compressus* Smith, *Eng. Fl.*, 1824, 234.

Stem slightly compressed (3 : 1) with rounded edges, slender, little branched. Leaves often fascicled, linear, usually 4-6.5 cm. long × 2-3 mm. wide—Swedish specimens often 7.5-10 cm. × 4 mm.—commonly subacute but may be obtuse and suddenly apiculate; light green in colour often becoming yellowish when dry as is the case with *P. rutilus* and *P. panormitanus*, the 2 other species of the *Pusilli connati* section. The normal leaf possesses 5 veins and the space between the midrib and the nearer of the 2 lateral veins is always much wider than that between the 2 lateral veins—usually it is nearly or quite twice as wide, both the lateral veins being nearer the margin. Thus the relative widths of the spaces from margin to margin are roughly 1 : 1 : 2 : : 2 : 1 : 1. The separate figure of the venation given on Pl. 53 of *Pols. Br. Isles* is therefore quite incorrect. Occasionally the leaves possess either 3 or 7 veins. Babington (*Man.*, 1922, 442) gives "no intermediate veins," which is correct, but refers to the fine parallel longitudinal veins seen in the leaves of *P. zosterifolius* and *P. acutifolius*. Unfortunately, however, students wrongly assume that there are "no other veins" between the 5 given. There are, of course, the usual short transverse connecting veins. Stipules conspicuous, white or greenish, hyaline connate ochreate but soon splitting both back and front. Spikes short (10-20 mm.), interrupted, with few flowers. Peduncles ± thickened upward but flattened like the stem, 2.5-5 cm. in length—in Scandinavian examples longer. Fruits small (2.2-2.5 mm. × 1.5 mm.), slightly larger than those of *P. panormitanus* which they much resemble in shape, and approximately the same size as those of *P. pusillus* but narrower at the base; olive green in colour, bluntly keeled, with a short beak. This species is still commonly confused with *P. obtusifolius* by both British and foreign botanists, but it may be readily distinguished by its habit, the lighter colour and different venation of its leaves, its much longer peduncles and smaller fruits.

P. pusillus L., *Sp. Pl.*, 1753, 127.

Although this species is very generally distributed and usually more easily obtainable than any other in the genus, it is still imperfectly known. This is largely due to its extreme variability and also to the fact that collectors rarely examine the young stipules while fresh. Stem slender, subterete, usually broadly elliptical in section and very little compressed. In small plants often nearly simple, in large ones (24 in. or more) copiously branched. Leaves very variable in size, measured British examples vary from 20-55 mm. in length and from 0.5 mm. (var. *tenuissimus*) to 2 mm. (sub-sp. *lacustris*) in width. The most general width is 1 mm. or less and the colour dark green. The leaf-apex also shows considerable variation. Typically the apex is more or less rounded and with a subacute tip, but it may be quite obtuse (sub-sp. *lacustris*), mucronate or even tapering and finely acute. Specimens sent by me from Poaka Beck reservoir, N. Lancs, to the late Dr J. O. Hagström were considered by him to possess more acute apices than any he had previously seen (f. *acutissimus* Hagstr.)—see *Rep. B.E.C.*, 1919, 841. The leaves of this species are invariably 3-nerved—even in var. *tenuissimus*. The 2 lateral veins meet the midrib about 1 mm. from the tip, and curve sharply inward before doing so. Transverse connecting veins are usually present in the broader leaves but may be scarce or absent in the narrower ones. The stipules are a most valuable character. They are always open and convolute, small, hyaline, cymbiform, obtuse, 6-8 nerved, and soon deciduous but usually present in the axils of the leaves beneath the branches or peduncles. Spikes very rarely interrupted, usually short and close, 2-12 flowered. Peduncles slender not thickened above, very variable in length, from 0.5-3 cm. most often but in very robust specimens up to 10 cm. They are always at least 2-4 times the length of the spike. Fruits small (2-2.5 mm. long), ± elliptical, scarcely compressed and acuminately pointed above. The back is rounded when fresh but with well-marked blunt keel when dried—sometimes tricarinate. The beak is short normally and only occasionally long. The base often develops tubercles. For a more detailed account of this species see *Journ. Bot.* (*l.c.*).

Sub-sp. *lacustris* Pearsall, *Journ. Bot.*, June 1921, 163-4. See also *Rep. B.E.C.*, 1919, 841.

This deep-water form of *P. pusillus* occurs in all the larger English lakes, and most probably elsewhere under similar habitat conditions—finer and richer soils than *P. pusillus* and under a light-intensity of 10-2 per cent. of full sunlight. Although first distributed as *P. Sturrockii*, we are of opinion that the plants from the English lakes are quite distinct from that species or from any named variety of *P. pusillus.* Both Mr Ar. Bennett and Dr Hagström subsequently confirmed our opinion. The sub-sp. *lacustris* differs from all other forms of *P. pusillus* in its broader leaves of uniformly lighter colour, with apices more obtuse (*f. obtusissimus* Hagstr.) than in any other form of the species—usually nearly semicircular—and in the fact that it propagates itself mainly, if not entirely, by winter-buds. Stem terete, thread-like, branched, with internodes and anatomy as in *P. pusillus.* Leaves of thin texture, soft, light-green in colour—reddish or brown in older leaves—pellucid, 27-55 mm. long × 1.5-2 mm. broad, 3-nerved with lacunæ on either side of the midrib and lateral nerves nearer the margin. Transverse connecting veins are prominent. The leaves are slightly narrowed below, not tapering above, with apex very rounded-obtuse, usually more so than in *P. obtusifolius.* Ligules open and convolute. Peduncles slender, short (± 24 mm.) with small (2-3 mm.) few-flowered spikes. In the original paper (*Journ. Bot., l.c.*) we stated that mature fruit was not produced. In 1921, Esthwaite was abnormally low during the hottest summer and longest drought for 25 years. The sub-sp. *lacustris* fruited freely both in this lake and in Windermere. The fruits are identical with those of *P. pusillus* in size, colour, texture and shape. They vary in size—as do those of the type—but are usually 2 mm. long when well-grown, olive-green in colour with slightly rough (tuberculated) surface and broad false keel. The average length of 13 peduncles from Esthwaite plants in 1921 was 26.5 mm.

Var. *Berchtoldi* (Fieb.) Asch. et Graeb., *Syn. Mitteleurop. Fl.*, 1897, 345.

Fieber's *P. Berchtoldi* (*Pot. Böhm.*, 1838, 40-41) includes forms of *P. pusillus* and also hybrids of that species with *P. Friesii.* French authors give the name to hybrids of *P. obtusifolius* × *trichoides.* The *pusillus* forms have been separated by Ascherson and Graebner as above. They possess broader and rather acute leaves and fruits slightly larger or thicker than in the type. All the "Lake Lancashire" examples mentioned in *Pots. Brit. Isles*, 84, are not this variety but come under var. *major* M. & K.

Var. *tenuissimus* Mert. et Koch, *Deut. Fl.*, 1823, 1.

Stems filiform, much branched. Leaves very narrow—0.5 mm. or less—linear-subulate, acute and 3-veined. Most authors give the leaves of this variety as 1-nerved. The 2 lateral nerves are so faint as to be barely discernible at times, but they are undoubtedly present. (Has any British *Potamogeton* leaves possessing only 1 nerve?) Much of the material so labelled in British herbaria is *P. panormitanus*.

P. Sturrockii Ar. Benn., *Scot. Nat.*, 1883, 28, and *Pots. Brit. Isles*, 1915, 84. *P. pusillus*, sub-sp. *Sturrockii* Hooker, *Stud. Fl.*, 1884, 435. Non *P. Sturrockii* Ar. Benn., *Rep. B.E.C.*, 1919, 841. *P. obtusifolius* × *panormitanus* Hagström, *Crit. Res.*, 1916, 117.

It is unfortunate that there should have been such considerable divergence of opinion as to the true status of this beautiful plant. By various authors it has been described as a species, a sub-species, a variety and a hybrid, respectively. To add to the confusion an entirely different species has been distributed under this name—see *Rep. B.E.C.*, 1919, 841. It may be well for members to remember that all plants from the English Lake District labelled *P. Sturrockii* are *P. pusillus*, sub-sp. *lacustris*. *P. Sturrockii* Ar. Benn. in our judgment has no relation with *P. pusillus* from which it differs in habit, much longer stem internodes, leaves of generally lighter colour, higher L/B ratio and uniformly subacute acuminate tips; longer peduncles and smaller fruits.

We cannot agree with Dr Hagström's contention that it is a hybrid of *P. obtusifolius* × *panormitanus* for many reasons, the chief of which are as follows. Measuring the lengths of the peduncles of a number of normal examples of each species involved, we obtained the following results:—

P. Sturrockii, 38-51 mm.—average 44.5 mm.
P. obtusifolius, 13-38 mm.—average 25.5 mm.
P. panormitanus, 15-30 mm.—average 22.5 mm.

It is impossible to imagine a hybrid whose average peduncles are 44.5 mm. long, having putative parents whose average peduncles are 25.5 mm. and 22.5 mm. long, respectively. If we consider the habitats we find that in Marlee Loch, Perth (whence Sturrock first sent it), *P. obtusifolius* abounds and *P. pusillus* occurs, but no *P. panormitanus*. In Rae Loch the same two species occur but there is no *P. Sturrockii*. On the other hand in Esthwaite Water, N. Lancs, where both putative parents are found—*P. obtusifolius* is abundant and *P. panormitanus* frequent—there is no *P. Sturrockii*!

We therefore conclude that *P. Sturrockii* is entitled to the specific rank Mr Arthur Bennett originally gave it. This opinion is based upon specimens sent to us by the late Mr Arth. Bennett from Marlee Loch, E. Perth, v.-c. 89, leg. A. Sturrock, 8/8/82 (Hbm. A. B., Nos. 607, 608), and many other examples, both dried and fresh, from the same loch, and does not include material from any other sources. This reservation appears to be necessary in view of the fact that in our opinion many sheets still labelled *P. Sturrockii* are varying forms of *P. pusillus*. Among such examples we should place those from Mugdock Loch, Stirling, R. Kidston, 19/7/1893 (Ex. Hb. A. B., No. 1562). These appear to be *P. pusillus*, var. *Berchtoldi* (Fieb.) Asch. et Graeb.

The authentic *P. Sturrockii* possesses the habit of *P. obtusifolius* rather than that of *P. pusillus*, a filiform stem slightly compressed and branching from the base. Leaves normally similar, long (25-75 mm.), narrow (1-2 mm.), subacute, light green in colour, translucent, with 3-5 nerves, the lateral rather feeble. Internodes very long; Marlee Loch examples 70-140 mm. Peduncles very slender, and usually very long when mature—occasionally 57 mm. in length. Spike from 2-6 mm. long, often dense, few-flowered only in small plants. Fruits smaller than in *pusillus*, both margins regularly rounded, obscurely keeled, with short beak.

P. rutilus Wolfgang in Roem. et Schult. *Sys. Veg. Mant.* iii., 1827, 362.

Stem very slender, ± compressed (2.5-3.1), simple with long internodes above, slightly branched below. Leaves bright green drying yellowish, erect, very narrow linear (0.5 mm. or less), 25-75 mm. in length, numerous below. Normally there are 3 prominent veins dividing the leaf-surface into 4 subequal parts. Occasionally there are 5 veins in the lower half only. The lateral veins join the midrib some distance below the apex—3 or more leaf-widths—but occasionally they peter out in the substance of the leaf without doing so. The leaves are narrower, much stiffer and much more acute than those of *P. pusillus*. They very gradually taper to a sharply acuminate apex and are often reddish at the base. Stipules connate ochreate, 10-20 mm. long, often with a tapering acuminate point, strongly veined and subpersistent. Spikes long (6 mm. or more) and few flowered (6-8). Peduncles 35-50 mm. long, slightly thickened above. Fruit 1-2 mm. long, nearly straight at the back, slightly rounded dorsally, the beak nearly in line with the ventral margin. Winter buds long and narrow but often wanting. Apparently at present only seen from Anglesey, the Orkneys and the Shetlands.

P. panormitanus Bivona Bernardi, Palermo, 1838. (See Hagström *Crit. Res.*, 1916, 98.) *P. gracilis* Fries, *Novit. Fl. Suec.*, 1828, 50.

Stem very slightly compressed, upper internodes long, 6-10 cm. Much branched at the base, little above. Branches long but spike-bearing branches short. Plant not "brsh-like" as in *P. pusillus*, and much lighter in colour. Leaves stiffer and narrower than in *pusillus*, with longer and more gradually acute apex. Midrib strong, raised below, lacking the bordering pale stripes (large-celled lacunæ) of that species. The leaves are 3-nerved, the 2 lateral joining the midrib more gradually at a distance of 2-3 times the leaf's width from the apex; light green in colour becoming yellowish when dried. Stipules light-brown, connate ochreate, more persistent than in *pusillus* and the uppermost longer and broader. Spikes cylindrical, ± interrupted, only 2-6 flowered as a rule, on very short branches. Peduncles terete, slender, 15-30 mm. in length. Fruit olive-coloured and smooth, "lacking the basal broadness of *pusillus*" and rarely showing false keels when dry. Winter buds *axillary*—always produced first at the base of the branches and later upwards; slender, relatively narrow, 12-15 mm. long × ½ mm. (or less) thick. In *P. pusillus* the winter buds are *apical*, produced first in the branch tops and later downwards, are much thicker and fusiform in shape. We have seen specimens of this species from the following vice-counties:—12, 13, 14, 16, 17, 22, 24, 27, 29, 30, 32, 40, 44, 46, 47, 49, 52, 53, 73, 85, 88, 89, 96, 98, 109, 111, 112.

P. trichoides Cham. et Schlecht. in *Linnæa*. ii., 1827, 175. *P. tuberculatus* Tenore, ap. Gussone *Fl. Neap.* app. v., 1842, 4. *P. monogynus* Gay ap. Coss. et Germ. *Fl. Paris.* supp., 1843, 89. *P. Phialae* Post, *Bull. Herb. Boiss.* i., 1893, 409.

Habit much like that of *P. pusillus*, which it also resembles in having open and convolute stipules, but its fruiting organs more nearly resemble those of *P. acutifolius*. Stem almost terete, capillary and repeatedly branched, most of the branches bearing spikes. This abundant ramification and richness in spiciferous branches is a marked character of this species. The leaves are very narrow (0.5 mm.—often less and occasionally more), subsetaceous, tapering to a fine point and also tapering to the base, often curled at the apex, semi-amplexicaul, spreading, rigid, deep dull green drying much darker, 25-65 mm. in length and always with 3 nerves. The midrib is relatively thick and wide but the 2 lateral veins are very faint (cf. *P. pusillus*, var. *tenuissimus*) joining some distance (2-3 times the leaf's width) from the apex. Stipules small, slender, open and convolute, acute or subacute and subscarious. Floral stipules larger. Peduncles extremely slender, filiform, not thickened, often curved (especially near the top), 5-11.5 cm. in length, very much longer than the very minute and few-flowered (3-6) spikes, which are oval-oblong or subglobose in form, and usually interrupted. The fruit varies considerably even on the same plant: small, 2-2.5 mm. long, ventral margin nearly straight with a tendency to produce a projection or tooth near its base, dorsal margin nearly semicircular and usually ± tubercled, obscurely keeled with short straight beak. Distribution mainly confined to the Eastern and Southern counties of England and a few places in Scotland.

Collection.—These plants are relatively easy to gather but collectors frequently experience some difficulty before getting them into the press. A vasculum which does not leak is essential, and if this contains a little water to keep the plants from becoming dry, they will withstand many hours' transit without injury. Their journey being ended they should be immersed in an ample supply of water and may be left for the night. This renders their leaves softer and more easy to manipulate when the plants are subsequently floated out. When on holiday, collectors will find the usual wire press very useful but in our own practice we prefer to use 2 drawing boards (18¾ in. × 13⅝ in.) made of several layers of 3-

ply wood and pressed together by 3 bands of thick window-blind cord with a running noose at one end. If 2 in. of the cord are left beyond the knot the pressure can be released in an instant with the greatest ease by pulling on these. Two such boards have been in use by us for 12 years and are still perfectly straight despite damp and pressure. They are somewhat heavier than a wire press but will accommodate any desired thickness of paper and will stand the roughest usage in transport. When collecting from a lake a boat is usually necessary and a word as to the most likely places in which to cast the dredger may not be out of place. No vegetation of any kind will be found below 33 ft., therefore all the rooted plants are found in the relatively narrow and shallow littoral zone. If a knot is tied in the cord 20 ft. above the dredger it will indicate when the depth is too great for *Potamogeton* to be expected. In exceptionally clear water they sometimes occur at this depth but if the water be at all peaty or discoloured half the depth will probably be the limit. Long and unbroken stretches of shore are normally barren, but the bays and smaller inlets should be diligently searched. Prevalent winds cause wave action and set up a decided littoral current which carries the finely eroded material along the shores. Upon entering a bay this current widens, becomes shallower, slows down and deposits its suspended silt upon the lake floor—here one may expect vegetation. Similarly, round the mouths of tributary streams, and on the lee side of a long spit projecting from the shore—either above or below the water-surface—plants may be found. The dredger will often reveal sudden holes or depressions in the lake floor; these are most likely to be silted and therefore to contain plants. As the floors of neither the Scottish nor Welsh lakes have been systematically investigated and mapped, we are of opinion that they should yield a rich harvest to any botanist willing to devote his holidays to their survey.

Elf Hall, Broughton-in-Furness.

MYOSOTIS PALUSTRIS AND ITS VARIETIES.

A. E. Wade, F.L.S.

The following is a preliminary survey and arrangement of the numerous described varieties and forms of Myosotis palustris which have come under my notice. The meagre descriptions and absence of type specimens make it, in many cases, difficult to decide what particular forms their authors had in mind, and this has led in the past to names being wrongly applied.

Myosotis palustris was first described by Linneaus in his *Species Plantarum*, ed. 1 (1753), as var. b. of his M. scorpioides, var. a. being arvensis. In 1764 Hill (*Vegetable System*) elevated them to the rank of species, restricting the name scorpioides to Linneaus' var. b. He, afterwards, in his *Herbarium Britannicum* (1769) changed the name to Myosotis palustris. In 1822 Reichenbach in Sturm's *Deutschlands Flora*, heft 42, described two new species, namely, M. laxiflora and M. strigulosa. In the same year Besser (*Enum. pl. Volhyn.*, p. 52) described another species under the name M. nemorosa. Reichenbach's two species were reduced to varietal rank under M. palustris by Mertens and Koch (*Deutschlands Fl.*, ii., p. 40, 1826). M. nemorosa Besser was similarly reduced by Godet (*Fl. du Jura*, p. 478, 1853). Opiz (Berchtold *Ok. techn. Fl. Böhm.*, ii., pt. 2, 1839) described two new species—M. elatior and M. radicans. M. elatior was reduced to varietal rank by Schinz and Keller (*Fl. Schweiz*, ed. 3, ii., p. 279, 1914). Du Mortier (*Bouquet du Littoral Belge*, pp. 32-38, 1868) separated from M. palustris the forms having short, non-leafy rhizomes and erect stems under the name M. coronaria. This he further segregated as follows:—α. glabrata, caule glabriusculo strigulis destituto. β. rosulata, foliis radicalibus congestis, caule brevissimo. γ. Reichenbachiana, caule piloso. δ strigulosa, caule strigulis vestito. The latter is equivalent to Reichenbach's M. strigulosa. The variety glabrata is probably identical with M. nemorosa Besser which is such a trifling form of M. palustris, var. strigulosa that I have here reduced it to the rank of forma of that variety. M. coronaria Dum. is so closely related to typical M. palustris that I do not feel justified in maintaining it even as a sub-species. Lamotte (*Prodromus fl. plat. central*, p. 538, 1881) described another form of palustris with erect stems and non-leafy rhizomes under the name of M. aspera. It is given varietal rank in this paper. Rouy in *Flore de France*, x., p. 320, 1908, gives under M. palustris, var. a. radicans and var. b. laxiflora DC., and segregates the forms with short, leafless rhizomes as a race under the name M. commutata R. and S., quoting M. nemorosa Bess., M. coronaria Dum. and M. aspera Lamt. as synonyms. The plant of Roemer and Schultes was a form of M. caespitosa Schultz, and the name commutata is here wrongly applied. Rouy also gives the following varieties under his race:—glabrescens, strigulosa and rosulata. The first includes the varieties glabrata and

REICHENBACHIANA of M. CORONARIA Dum. The second is equivalent to M. STRIGULOSA Rchb., and the third to M. CORONARIA, var. ROSULATA Dum. Hülphers in 1927 (*Svensk Tidskrift*) described two new segregates under the names M. PRAECOX and M. SEROTINA. M. SEROTINA I have here reduced to varietal rank. M. PRAECOX is probably a good species, but I have not seen a specimen.

From the foregoing it would appear that the earliest name to be given to our water-side forget-me-not as a distinct species is M. SCORPIOIDES, the name adopted by Hill in 1764, and it would thus be the valid one. But it seems that the question of its valid name is not so easily settled. It might be maintained that since Linneaus gave ARVENSIS as the var. a. of his M. SCORPIOIDES, he intended that plant to be taken as the typical form of the species. M. SCORPIOIDES L. would, therefore, be the correct name for M. ARVENSIS Hill as generally understood, and M. SCORPIOIDES Hill would in consequence be invalid as the name for our water-side forget-me-not. In view of the uncertainty as to the correct application of the name M. SCORPIOIDES L., and the very wide use of the name M. PALUSTRIS, I have retained the latter.

MYOSOTIS PALUSTRIS differs from M. CAESPITOSA Schultz chiefly in its larger flowers, in the calyx teeth being shorter and broader, about $\frac{1}{4}$-$\frac{1}{3}$ of the length of the calyx, and in being rather more acute. After flowering the calyx teeth tend to lengthen slightly. The cymes are ebracteate, whereas in CAESPITOSA there are often two or three bracts present at the base. The style is as long as the calyx tube or exceeding the calyx teeth; in CAESPITOSA it is much shorter, rarely becoming as long as the calyx tube. The nutlets are less truncate at the base as compared with those of CAESPITOSA.

The British localities given in this paper are those of specimens in the following Herbaria:—The Herbarium of Dr G. C. Druce (Herb. Druce), the Welsh National Herbarium, National Museum of Wales (Herb. N.M.W.) and the Herbarium of the Manchester Museum (Herb. Manchester).

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MYOSOTIS PALUSTRIS Hill *Herb. Brit.*, p. 170, 1769. M. SCORPIOIDES, var. PALUSTRIS L. *Spec. Pl.*, ed. 1, p. 131, 1753. M. SCORPIOIDES Hill *Veg. Syst.*, vii., 1764. ECHIOIDES PALUSTRIS Moench *Meth.*, p. 416, 1794. M. PERENNIS, var. PALUSTRIS DC. *Fl. France*, iii., p. 629, 1805.

Rhizome long, stoloniferous or short and non-stoloniferous. Stem usually branched, decumbent, rampant or erect, angular, with patent or adpressed hairs, sometimes almost glabrous. Leaves usually with adpressed hairs, sometimes subglabrous, lower leaves oblong-lanceolate to obovate-lanceolate, obtuse, attenuated into the petiole, the upper leaves narrower, obtuse or subacute and usually apiculate, sessile. Cymes leafless. Calyx campanulate, with adpressed hairs, calyx teeth triangular and about ¼-⅓ of the calyx. Fruiting pedicels one to two times as long as the calyx, rarely longer, patent or reflexed. Corolla usually 4-10 mm. diam., rarely only 3 mm. diam., sky-blue, rarely white, limb flat, lobes emarginate. Style equalling the calyx tube or longer than the calyx. Nutlets ovoid, black, shining, rounded at the apex, slightly bordered.

Var. MEMOR Kittel *Tasch. Fl. Deutschl.*, ed. 2, p. 421, 1844. M. PALUSTRIS, var. VULGARIS Coss. et Germ. *Fl. de Paris*, ed. 1, p. 266, 1845. M. PALUSTRIS, var. GENUINA Godron *Fl. Lorraine*, ii., p. 40, 1861. M. PALUSTRIS, var. TYPICA Halacsy *Consp. Fl. Graec.*, ii., p. 351, 1902. M. PALUSTRIS, var. RADICANS Rouy *Fl. de France*, x., p. 320, 1908, non Opiz.

Rhizome long, stoloniferous. Stem robust, decumbent, elongated, hairs patent or erect-patent below, adpressed above, but sometimes the plant is almost glabrous. Leaves with adpressed hairs, lower leaves broadly oblong-lanceolate, upper leaves slightly narrower, obtuse or subacute, apiculate. Cymes not long. Lower fruiting pedicels about twice as long as the calyx. Corolla large, 3-8 mm. diam. This is the common form in Britain. It is characterised by its very robust habit and stoloniferous rhizome and by the stem usually emitting numerous barren shoots. The figure in Sowerby's *English Botany*, ed. 3, represents the variety admirably. Kittel's description is very slight. I have not seen a type specimen, but have followed continental botanists, applying Kittel's name to our common form.

Forma ALBIFLORA Desportes (pro var.) *Fl. de la Sarthe*, p. 169, 1838.
Flowers white.

Forma MACRANTHA Beck von Mann. *Fl. Nied.-Oest.*, p. 969, 1893.
A form with flowers from 5-10 mm. diam.

Forma PARVIFLORA Ledeb. (pro var.) *Fl. Alt.*, i., p. 189, 1829.

A form with the flowers about 3 mm. diam. and the flowers rather closer in the cyme.

Localities:—Gilwern, Breconshire; Llangorse Lake, Breconshire, A. E. Wade (Herb. N.M.W.). Earn Shingle, M. Perth, G. C. Druce (Herb. Druce).

G. Klebs (*Einige Ergebnisse der Fortpflanzungsphysiologie* in *Berichte der deutschen botanischen Gesellschaft*, xvii. (Generalversammlungs—Heft (1900). p. 201) found that the size of the corolla of M. PALUSTRIS was changed by feeble light, too moist air or by too strong nutrition.

Var. HIRSUTA Braun in Asch. *Fl. Brandenb.*, p. 448, 1864.

Rhizome stoloniferous. Stems 7-20 cm. high, erect or decumbent, very hairy below with patent hairs, hairs adpressed above. Barren shoots with patent or erect-patent hairs. Upper leaves ovate-lanceolate, obtuse, apiculate, lower leaves obovate-lanceolate, obtuse. Cymes rather short. Fruiting pedicels as long as the calyx, patent, lower becoming recurved. Calyx as in type. Style longer than the calyx. Corolla 8 mm. diam. The description in Ascherson's *Flora von Brandenberg*, which reads " Niedrig; stengel dicht-rauhha " is too meagre to enable one to be sure of the plant represented by this name. The above description has been drawn up from the Caithness specimens, which I believe to be the form intended by Braun. F. N. Williams in his *Prodromus Fl. Brit.* gives under M. PALUSTRIS the var. CAESPITITIA DC. quoting var. HIRSUTA Braun as a synonym. The former is, however, quite distinct, being a dwarf plant some 3-5 cm. high, with a few adpressed hairs. It was raised to specific rank by Wartmann who named it M. REHSTEINERI.

Localities:—Near Ayton Law, banks of the Eye Water; near Victoria Jubilee Bridge, along the banks of the Eye Water, N.E. Berwickshire; edge of Loch Kinellan, E. Ross, C. Bailey (Herb. Manchester). Sand-dunes, Reay, Caithness, W. A. Shoolbred, G. C. Druce (Herb. Druce, Herb. N.M.W.).

Var. RADICANS Opiz (pro sp.) in *Bercht. Ok. techn. Fl. Böhm.*, ii., 2, p. 113. 1839.

Rootstock stoloniferous. Stem decumbent, rooting, with long patent hairs. Stem-leaves longish-lanceolate, obtuse, apiculate. Fruiting pedicels patent, as long as the calyx. Style longer than the calyx. Corolla smaller than in typical PALUSTRIS. This appears to be little more than a form of PALUSTRIS with small flowers and very hairy stems.

Var. ORBELICA Velen. *Fl. Bulg.*, p. 401, 1891.

Rhizome with long, slender stolons, plant small, 7-15 cm. Stem little branched. Radical leaves obovate-spathulate, attenuated into the petiole, with soft, patent hairs, the rest oblong, acute, sessile, with adpressed hairs. Corolla small. The above is a translation of Velenovsky's description. The writer has not seen a specimen, but the description suggests some affinity to M. REPENS Don. It is found in alpine bogs in Bulgaria.

Var. ALPICOLA Schur *Enum. Plant. Transs.*, p. 474, 1866.

This is described as being subcaespitose ascending and having the stems and leaves setulose-strigose, leaves elliptical-oblong, cymes lax and flowers about half the size of typical PALUSTRIS, and the calyx with white, adpressed hairs. In the Herbarium of Schur in the Natural History Museum of Vienna are two specimens labelled MYOSOTIS PALUSTRIS, var ALPINA, which appear to be the same as the plant described above. In addition to the characters given above the specimens are about 20 cm. high, with a horizontal rhizome. The stems are, however, glabrous below. The cymes are about a third to one-half of the total length of the plant and the fruiting pedicels as long as the calyx, the teeth of which are rather short and broadly triangular, even when in the fruiting stage. The style is a little shorter than the calyx. On the whole it suggests a somewhat stunted form of the type. Its habitat is given as by rivulets in alpine pastures.

Forma ALBIFLORA Schur (pro var.) *Enum. Plant. Transs.*, p. 474, 1866.
Flowers white and a little larger.

Var. SEROTINA Hülphers (pro sp.) *Svensk Bot. Tidskr.*, 21, p. 69, 1927.
Stem 30-75 cm. high, more or less patently hairy below, emitting numerous sterile shoots. Leaves numerous, dark green; upper, lanceolate; lower, lingulate and shortly petioled. Fruiting pedicels 1½ times as long as the calyx, patent or a little reflexed. Calyx short, rotundate-campanulate, teeth broad, short, about ¼ length of calyx. Styles a little longer than the calyx. Corolla about 10 mm. diam. Nutlets broadly ovate 1.3-1.6 mm. long, 1-1.2 mm. broad. A specimen in the Welsh National Herbarium, collected and named by Hülphers, has the calyx teeth nearly ⅓ the length of the calyx and the lower fruiting pedicels at least twice as long as the calyx. The Bladon Wood specimens agree with the description in these respects.

Locality:—Bladon Wood, Oxon, G. C. Druce (Herb. Druce and N.M.W.). Hülphers includes England and Scotland in the distribution.

Var. MARTINI Sennen (pro sp.) *Plantes d'Espagne*, 1926, No. 5804.
This plant was issued in the exsiccata with the above title, a description in French appearing on the label. The following is a translation:—Rhizome black, slender, radicant. Stems glabrous, shining, brown, long-leaved, with a very few hooked or adpressed hairs above. Leaves sessile, oblong-lanceolate, hairy, densely ciliate, apiculate, hairs patent. Cymes short, dense-flowered or lax-elongated. Pedicels becoming long, about 1 cm. Calyx teeth short, deltoid. Corolla about 8 mm. diam. Sennen suggests that this is a form intermediate between the species with adpressed hairs and those with hooked hairs. An examination of specimens seen by the writer failed to show the presence of hooked hairs. The specimens were collected in meadows in the Vallée de St Martin, Angoustrine, Cerdagne, at 1500 m. Sennen believes it to be probably endemic.

Var. LAXIFLORA (Reichb.) Mert. u. Koch *Deutschl. Fl.*, ii., p. 40, 1826.
M. LAXIFLORA Reichb. in Sturm *Deutschl. Fl.*, Heft 42, 1822.

Rhizome fibrous, creeping a little in water. Stem erect, tall and slender, up to 2 feet high, simple, decumbent when growing in water, hairs adpressed, those of the sterile shoots spreading. Leaves lanceolate, usually narrow, seldom broad, lower leaves obtuse, the upper acute. Cymes lax, single or bifid, 20 or more flowered. Fruiting pedicels 3-4 times as long as the calyx, patent or reflexed. Calyx short, almost hemispherical. Corolla large, 8-10 mm. diam., lobes emarginate. Style slightly longer than the calyx. This is a form of wet shady places, characterised by its tall slender habit, long pedicels, and its style exceeding the calyx. Judging from Reichenbach's rather unsatisfactory specimens in the Natural History Museum of Vienna it approaches var. MEMOR very closely.

Localities:—River Wye, near Chee Tor, Miller's Dale, and near Ashford, Bakewell, Derbyshire, C. Bailey (Herb. Manchester).

Forma GLABRA Schur (pro var.) *Enum. Pl. Transs.*, p. 473, 1866.

Whole plant glabrous.

Forma PARVIFLORA Reichb. in Sturm *Deutschl. Fl.*, Heft 42, 1822.

A form with flowers about half the size of the variety and shorter styles.

Var. STRIGULOSA (Reichb.) Mert. u. Koch *Deutschl. Fl.*, ii., p. 40, 1826. M. STRIGULOSA Reichb. in Sturm *Deutschl. Fl.*, Heft 42, 1822. M. CAESPITOSA, var. STRIGULOSA Boenn. *Prodr. Monast.*, p. 55, 1824. M. CORONARIA, var. STRIGULOSA Dum. *Bouq. litt. belge*, p. 37, 1868. M. SCORPIOIDES, var. STRIGULOSA Schinz u. Keller *Fl. der Schweiz*, ed. 3, ii., p. 279, 1914. M. COMMUTATA, var. STRIGULOSA Rouy *Fl. de France*, x., p. 320, 1908.

Rhizome horizontal, non stoloniferous. Stems erect or decumbent, 30 cm. or more high, with adpressed hairs throughout, seldom with barren shoots. Leaves oblong-lanceolate, strigose, lower leaves lanceolate, obtuse. Cymes fairly long, 20-40 flowered. Fruiting pedicels 1-2 times as long as the calyx, patent or slightly reflexed. Calyx as in typical M. PALUSTRIS. Corolla large, lobes emarginate. Style as long as the calyx tube. This variety has been very much misunderstood by British botanists owing to the very meagre and inadequate descriptions found in British Floras, sometimes "hairs adpressed" being the only character given. Its distinguishing characters are its non stoloniferous rhizome, slender, erect habit, and the stem clothed with adpressed hairs.

Localities:—Coleman Moor, Berks; Harlech, Merioneth, G. C. Druce (Herb. Druce). Criccieth, Carnarvonshire, C. Bailey. Buxton, Derbyshire, W. H. Painter (Herb. Manchester). Near Bakewell, Derbyshire, W. H. Purchas (Herb. N.M.W.). Throxenby Mere, N.E. Yorks, R. Plummer (Herb. Manchester). Inverurie, Aberdeen, F. C. King (Herb. N.M.W.). Gairloch, W. Ross, G. C. Druce (Herb. Druce). Wick, Caithness, W. A. Shoolbred (Herb. N.M.W.). Scarmlett, Caithness; Uyea, Unst; Spiggie, Shetland; Huisbreck Loch-side, Shetland, G. C. Druce. Drayton Fields, T. Beesley. Cashell, Co. Galway, G. C. Druce (Herb. Druce).

Forma VULGATA Beck von Mann. *Fl. von Nied.-Oest.*, p. 969, 1893.

Upper leaves lanceolate, 10-15 mm. broad, shortly apiculate.

Forma LANCIFOLIA Beck von Mann., *l.c.*

Upper leaves linear-lanceolate, sub-acute, apiculate, scarcely 10 mm. broad, usually narrower.

Forma GRACILIS Boenn. (pro var.) *Prodr. Monast.*, p. 54, 1824. Forma MICRANTHA Opiz in Bercht. *Ok. techn. Fl. Böhm.*, ii., 2, p. 114, 1839.

Corolla 4-5 mm. diam.

Forma NEMOROSA Bess. (pro sp.) *Enum. pl. Volhyn.*, p. 52, 1822. M. PALUSTRIS, var. VIRGINIA Kittel *Fl. Deutsch.*, ed. 2, i., p. 421, 1844. M. PALUSTRIS, var. NEMOROSA Godet *Fl. Jura*, p. 478, 1853. M. CORONARIA, var. GLABRATA Dum., *l.c.* M. COMMUTATA, var. GLABRESCENS Rouy, *l.c.*, p.p.

Stem glabrous with a few adpressed hairs above.

Localities:—Cothill, Berks; Wytham, Berks, G. C. Druce (Herb. Druce). Dunham Massey, Cheshire, C. Bailey (Herb. Manchester).

Var. REICHENBACHIANA comb. nov. M. PALUSTRIS, var. GENUINA Gren. et Godr. *Fl. de France*, ii., p. 529, 1852, non Bouvier *Fl. des Alpes*, p. 457, 1878. M. CORONARIA, var. REICHENBACHIANA Dum., *l.c.* M. COMMUTATA, var. GLABRESCENS Rouy, *l.c.*, p.p.

This variety differs from var. STRIGULOSA in having the stem clothed with patent hairs. Gradations between this and var. STRIGULOSA, f. NEMOROSA, are frequent.

Nyman in his *Conspectus* and Gandoger in his *Nuovo Conspectus Florae Europae* give a M. LITHUANICA as a var. or sub-sp. of M. PALUSTRIS. I have been unable to trace a published description of this but I have seen Besser's specimens which are in the Herbarium of the University and the Herbarium of the Natural History Museum of Vienna. Although the specimens are unsatisfactory they evidently belong here. It is not uncommon in Britain and is probably more widely distributed than the var. STRIGULOSA which is, judging from the material I have seen, more Northern in its range.

Localities:—Bransbury, Northants, C. B. Clarke (Herb. N.M.W.). Bullingdon, Oxon; Wytham, Berks, G. C. Druce (Herb. Druce). Marshfield, Monmouth, A. E. Wade (Herb. N.M.W.). Lymm, Cheshire, C. Bailey; Banks of the R. Alt, Hightown, S. Lancs, J. H. Lewis; Formby, S. Lancs, J. & S. Fisher (Herb. Manchester). Ince Blundell, S. Lancs, Rev. W. Wright Mason. Croxdale, Durham, H. E. Fox (Herb. Druce). Jenkin Stells, N.E. Yorks, J. A. Wheldon (Herb. N.M.W.). Garslock, N. Ross, G. C. Druce (Herb. Druce). Cashendun, Co. Antrim, W. A. Shoolbred (Herb. N.M.W.). Castle Taylor, Co. Galway, A. G. More (Herb. Manchester).

Var. ROSULATA comb. nov. M. CORONARIA, var. ROSULATA Dum., *l.c.* M. COMMUTATA, var. ROSULATA Rouy, *l.c.*, p. 321.

Rhizome short non-stoloniferous. Stem erect and short. Lower leaves forming a rosette.

Var. ELATIOR Schinz u. Keller *Fl. der Schweiz*, ed. 3, ii., p. 279, 1914. M. ELATIOR Opiz in Bercht. *Ok. techn. Fl. Böhm.*, ii., 2, p. 115, 1839.

Rhizome short, non-stoloniferous. Stem erect, up to 90 cm. high, glabrous or with a few scattered, adpressed hairs. Cauline leaves large, lingulate, obtuse (the apiculus gives the leaves the appearance of being acute), rather longer in proportion to their breadth than in typical M.

PALUSTRIS, almost glabrous, with a few scattered hairs. Fruiting pedicels patent, about as long as the calyx. Style shorter than the calyx. This well marked variety is, judging by the large gatherings I have seen, the common form in Central Europe.

Var. PSEUDO-CAESPITOSA Fiori in Fiori e Paol. *Fl. An. d'Italia*, Appendix, p. 166, 1907. M. PALUSTRIS, var. STRIGULOSA, forma PSEUDO-CAESPITOSA Beg. in *Ann. di bot.*, del Prof. R. Pirotta, i., p. 277, 1904. M. PALUSTRIS, var. CAESPITOSA. b. MACRANTHA Fiori in Fiori e Paol. *Fl. An. d'Italia*, ii., p. 369, 1902.

Rhizome short, non-stoloniferous or wanting. Plant caespitose. Stems erect. Leaves oblong-lanceolate. Fruiting pedicels 1½-2 times as long as the calyx, patent or reflexed. Calyx rather more deeply cut than in typical PALUSTRIS. Style as long as the calyx tube. Flowers 5-6 mm. diam. This variety is near to the var. STRIGULOSA but is characterised by its caespitose habit and rather more deeply cut calyx, which is, however, not so deeply cut as in M. CAESPITOSA. It differs from CAESPITOSA chiefly in its long style and large flowers. It seems to be confined to Italy and Lower Austria.

Forma APENNINA Fiori in Fiori e Paol. *Fl. An. d'Italia*, Appendix, p. 166, 1907. M. SICULA, var. APENNINA Beg. in *Ann. di bot.* del Prof. R. Pirotta, p. 279, 1904.

A form of var. PSEUDO-CAESPITOSA with flowers only 2-3 mm. diam. and the lobes of the calyx non-emarginate. It occurs growing with the variety in Italy.

Var. ASPERA Lamt. (pro sp.) *Prodr. Fl. Plat. central*, p. 538, 1881, non Schur.

Rhizome oblique, non-stoloniferous. Stem erect, angled, simple or shortly branched above, more or less hairy below with short, stiff, patent hairs, sometimes almost glabrous and shining. Leaves close, the lower covering about ¾ of those immediately above, broadly oblong, rough with adpressed hairs above and with almost adpressed hairs below, apiculate. Radical leaves broad, attenuated into the petiole. Cymes lax. Fruiting pedicels 1-2 times as long as the calyx, becoming patent or reflexed. Style a little shorter than the calyx. This variety forms large tufts in marshy places; when growing in drier places it becomes much stiffer in habit and the hairs more abundant. Central France and Austria.

EXCLUDED VARIETIES.

Var. CAESPITITIA DC. *Prodr.*, x., p. 105, 1846, = M. REHSTEINERI Wartm.

Var. BAETICA Per. Lara. *Fl. Gaditana*, p. 301, 1886-93.

A well marked plant, which I believe to be specifically distinct from M. PALUSTRIS.

Var. SCABRA Simk. *Enum. Fl. Transs.*, p. 408, 1886.

The description is too slight to enable the plant to be identified.

PANSY NOTES.

Dr Eric Drabble.

Notes on the List of Pansies in "The British Plant List," ed. 2, 1928.

It will be evident from Dr Druce's note on p. viii.—" Dr E. Drabble . . . has seen specimens of all the plants [pansies] enumerated, and has supplied the comital numbers "—that the list printed is not exactly as it left my hands.

The claim for *V. Kitaibeliana* R. & S. as a British plant rests on certain specimens collected by Mr W. C. Barton in Jersey (*Rep. B.E.C.*, 1923, p. 30). These were merely large plants of *V. nana*—the f. *major* (sub-var. *major* Rouy and Foucaud), of which Bro. Louis Arsène has sent me excellent material. I have some recollection of naming a plant many years ago for Mr Barton as one of the *Kitaibeliana* Section, but certainly I never called it *Kitaibeliana* R. & S., *sensu stricto*. It has been shown in *Journ. Bot.*, May 1928, pp. 129-132, that we are not in a position to state definitely what Roemer and Schultes meant by *Kitaibeliana*. That there is a *Kitaibeliana* Section seems clear, but no British member of this Section other than *nana* and its forma *major* has come to my notice. Indeed, a consideration of their distribution seems to show that it is improbable that others should occur in this country (*Journ. Bot.*, *loc. cit.*).*

V. nana f. *major* is close to *V. olonensis* Genev. Mem. Soc. Acad. Angers, but I am not able to follow Rouy and Foucaud in making these names synonymous. *V. olonensis* from Gaston Genevier himself in Herb. Kew is distinct from the large specimens of *nana* which are sub-var. *major* R. & F. *V. nana* also occurs on the Sables d'Olonne and with it probably f. *major*, which is merely a growth-form. That Genevier did not confuse these plants is made quite clear by his specimens in Herb. Kew.

As the note on p. 30 in *Rep. B.E.C.*, 1923, calls attention to the fact that Rouy and Foucaud place *derelicta* Jord. under *Kitaibeliana*, it may be useful to point out that they were mistaken. *V. derelicta* Jord. is an *Arvensis* pansy. This is rendered perfectly clear by a consideration of the following specimens:—*V. derelicta* Jord. Haute Savoie, Août 1857 (legit ipse). in Herb. Mus. Brit. and *V. derelicta* Jord. Billot Fl. Gall. et Germ., 2022, in Herb. Mus. Brit. and in Herb. Imp. College of Science.

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* My deletion of the brackets from *Viola Kitaibeliana*, which were put in the first edition of the *List*, was due to the statement of Mr W. C. Barton in *Rep. B.E.C.*, 30, 1923, where he says that the type, as well as the var. *nana* DC., occur in Jersey. I there say his larger specimens are what my *nana* grew to in my garden.—G. C. Druce. I cannot imagine what Mr Barton meant by *the type*. We do not know what type *Kitaibeliana* was; certainly it was not a maritime plant of Western Europe.—E. Drabble.

V. lutea Hudson, d. *polychroma* (Kerner). Dr Clausen (*in litt.*) tells me that he thinks *polychroma* Kerner should be placed in the *Saxatilis* series and suggests that in Derbyshire we may have a form of *lutea* parallel to Kerner's *polychroma*. At present I can only say that our *polychroma* is a *lutea* pansy, grading into ordinary *lutea*, and that it seems to me to be identical with *polychroma* Kerner. Formerly (*Journ. Bot. Suppl.*, 1909, p. 10) I had placed it in the *Saxatilis* series.

There remain for consideration the "Names omitted as uncertain or synonymous" (*List*, p. 14) and the additions in *Rep. B.E.C.*, 1928, p. 878.

The omissions from *List*, ed. 1, are as follows:—

V. banatica Kit. This name seems to have got into our Flora when Borbás so named a plant from Stayne Wood, Bembridge, Isle of Wight, collected by C. E. Palmer in 1900. As I have pointed out fully in *Journ. Bot.*, February 1927, p. 47, Borbás was entirely mistaken. F. N. Williams rightly recognised that the plant was unnamed and called it *V. tricolor* var. *vectensis* (F. N. Williams Prod. 10, 1912). It is the *V. variata* c. *vectensis* of the *List*. The name *banatica* is rightly omitted in ed. 2.

V. confinis Jord. The undermentioned sheets are forms of *lepida*.

V. confinis Jord.! Billot. No. 1825, in Herb. Mus. Brit.

V. confinis Jord. Fl. Sequaniae exsicc. 17, in Herb. Mus. Brit. and the corresponding sheet in Herb. Imp. College of Science, S. Kensington.

Indeed the only properly based name of general application to the British forms of the *Saxatilis* series is *lepida*.

V. gracilescens Jord. The specimen in Herb. Kew from Seringe's herbarium, labelled *gracilescens* DC., is not Jordan's plant, while *V. gracilescens* Jord. of Schultz's Herb. Norm. is quite unlike Jordan's figure of *gracilescens*. This name ought never to have appeared in British Lists and is rightly omitted.

V. mentita Jord. ap. Billot Fl. Gall. et Germ., 2021, in Herb. Brit. Mus. seems to be indistinguishable from *ruralis*. Jordan's specimen of *ruralis* in Herb. Imp. College makes this name secure, while *mentita* Jord. is somewhat doubtful.

V. Paillouxi Jord. and *V. Sagoti* Jord.—Jordan himself (*Obs.*, ii., p. 36) expresses some doubt as to the distinctness of these plants. *V. Sagoti* Jord. in Herb. Déséglise, 17 Mai 1862, Haute Savoie, in Herb. Imp. College, is a stout, large-flowered *contempta*, while *V. Paillouxi* Jord., in the same herbarium, resembles a yellow-flowered *Lloydii*. Both names may be ignored as unsatisfactorily based, while both *contempta* and *Lloydii* are beyond dispute.

V. Provostii Boreau (cited as of R. & F. in the *List*) is described by Boreau Fl. du Centre, ed. 3, ii., 82, is an *annual*. His own specimen in Herb. Imp. College is yellow-flowered *lepida*, as is also Gaston Genevier's plant, so labelled, from Vendée in Herb. Mus. Brit. That the plant is *perennial* seems to be shown clearly, at least in the second specimen mentioned, and the question arises whether Boreau wrongly described

Provostii as annual, or whether he confused two plants under this name. The matter was referred to in *Journ. Bot.*, February 1927, p. 44. *Annual* plants of this kind apparently would come under *Lloydii*; *perennial* ones under *lepida*.

V. Timbali Jord. seems not to be satisfactorily distinguishable from *Deseglisei*, but I have not been able to determine exactly what Jordan and Boreau meant by *Timbali*. On the other hand we are left in no doubt about *Deseglisei*, and I have adopted this name in preference to the earlier but unsatisfactory *Timbali*. It is possible, however, that an upright plant with the habit of *Deseglisei* and the texture and hairiness of *agrestis* may be distinct. If so the name *Timbali* may have to be revived for this.

V. meduanensis Boreau seems to be based on plants of *lepida* flowering in their first year. (See *Journ. Bot.*, June 1927, pp. 169-170.)

V. vivariensis Jord. I have not seen any British specimens that agree with Jordan's figure of this plant (*Obs.*, i., plate 2).

V. sabulosa Boreau. F. N. Williams (*Prod.*, iv., 591) rightly pointed out that the plant so named by Jordan from New Brighton and Wallasay Sandhills (now extinct) did not agree with *sabulosa* from Ostend. I have already stated (*Journ. Bot.*, August 1927, p. 218) that a plant from Northumberland with long, narrow leaves approaches true *sabulosa* and I hope to obtain more material this year.

In Dr Druce's "Additions and Corrections to the *List*" in *Rep. B.E.C.*, 1928, vol. viii., part v., p. 878, are given *V. declinata* W. & K. and *V. subincisa* Jord. The name *V. declinata* Waldst. and Kitaib. was quite incorrectly given by A. O. Hume to certain plants collected by P. Hilton at Chailey, Sussex, in 1906 and 1907. I have already pointed out his error in *Journ. Bot.*, June 1927, pp. 170, 171. *V. declinata* has not been found in this country.

V. subincisa Jord. In *Journ. Bot.*, October 1926, pp. 265-6, it was mentioned that two specimens in my herbarium from Nottinghamshire and Lancashire respectively, with the general habit and characters of *segetalis*, possessed very deeply toothed, almost incised leaves. Not having been able to find a specimen of *subincisa* named by Jordan or Boreau I cannot state definitely that these are *subincisa*, though Boreau's description (*Fl. du Centre*, ed. 3, ii., 83) seems to fit them. If so, *subincisa* can only be regarded as a form of *segetalis*.

BRAMBLE NOTES, 1929.

WM. WATSON.

RUBUS CRUENTATUS P. J. M.

In the southern part of Epping Forest, at various spots between High Beech and Fairmead Bottom, I have noticed a bramble which must belong to the *R. obscurus* group, and which I identify as above. I have not seen an authentic specimen of *R. cruentatus* as yet, nor found any description by Müller. The foregoing determination is therefore provisional.

The stem is green, spotted with fuscous red, blunt-angled with flat sides, densely hairy at first and bearing short-stalked glands. The prickles are short and weak, much compressed, patent, declining or falcate; and pricklets with enlarged bases occur. The leaves are 3-5-nate, pedate, light green and thin; rough above, and velvety beneath; the margins with rather uneven blunt teeth; the leaflets becoming convex and plicate. Petiole and petiolules with slender, weak, deflexed or subfalcate prickles; the intermediate petiolules very short. Terminal leaflet broadly elliptical-obovate, tapering into a long and fine point, which is very conspicuous in the young leaves; the base rounded, subentire to subcordate.

The panicle is broadly pyramidal, leafy below, the leaves all green beneath; the lower and middle branches are long and spreading, the pedicels short and the flowers therefore closely congregated together. Rachis flexuous, villous, with many slender yellowish declining prickles, many acicles and many short dark-stalked glands. Calyx segments grey felted and villous externally, glandular and very aculeolate; very white within; patent after flowering, loosely reflexed from the ripe fruit. Petals deep pink, narrowly obovate, tapered below, not clawed, entire at the apex. Stamens pink, equalling or slightly exceeding the magenta styles. Anthers glabrous. Young carpels very pilose. Fruit a deep crimson before turning black.

R. FESTIVUS M. & W.

I have met with this in Epping Forest also, and have had it frequently under my eye in the past two summers. The plant is a good deal hairy, the leaves soft beneath, the stem and panicle rachis purple and bearing unequal prickles, unequal acicles and unequal stalked glands, which last are more numerous on the panicle than on the stem. The stem is densely hairy, blunt-angled with flat sides and bears strongly declining prickles and many subsessile glands. The leaves are 3-5-nate, subdigitate, a fresh green, smooth, glabrescent and subpruinose above; green and silkily pubescent (in the sun subdiscolorous) beneath. The terminal leaflet on 3-nate leaves is broadly ovate-obovate or roundish, tapered to a short broad point; the base broad, truncate or subcordate. On 5-nate leaves the terminal leaflet is narrower and more oblong.

The flowering branch is densely felted and villous, and has a few long, slender deflexed prickles under the panicle. The panicle in large examples is much branched, broad at the top, the branches short or moderately long, patent and equal; the lower panicles are tapered, lax and leafy; small panicles are simply racemose. The stalked glands and fine prickle-bristles exceed the felt of the panicle branches; the pedicels are very prickly. Flowers rather large, rose pink; calyx segments ending in long leafy tips which stand erect on the bud in the manner of *R. rosaceus*. Stamens red, exceeding the styles. Young carpels glabrous.

R. MACROPHYLLUS, var. BOULAYI Sud.

On Bostal Heath, N.W. Kent, I have collected a striking variety of *R. macrophyllus*, which I identify as above. The stem is greyish green and very glaucous. The leaves are 5-nate, subdigitate, and the leaflets depart altogether from the shape of those in the type. The terminal leaflets are obovate-oblong, with a cuspidate point and rounded base, and are about four times as long as their stalk. Beneath they are slightly discolorous, becoming pale green, and have soft shining hairs and prominent pectinate veins. Stalks of the basal leaflets 3 mm. long. The margins are unevenly and unequally dentate-serrate, the principal teeth patent or repand. The prickles in the panicle are small, numerous and curved. There are a few stalked glands on the stem and in the panicle. Fruit normally produced.

The bramble issued in the *Set of British Rubi* to represent *R. macrophyllus* is this var. *Boulayi* also. It is stated in the *Handbook* to be "not typical."

R. GLABRATUS Bab.

In the preface to the *Handbook* it is stated that Dr Focke has suggested the name *R. ammobius* for a bramble colleced by Mr Druce in North Wales in 1899. By the kindness of Dr Druce I have seen the very specimen that Dr Focke named; and it is, in my opinion, certainly Babington's *R. macrophyllus*, var. *glabratus*.

Babington stated that his knowledge of this form was derived almost entirely from specimens collected by Watson near Long Ditton, Surrey. These can hardly have been *R. glabratus*, which is not met with in Surrey; but were most likely, I think, *R. Bakeri*, which grows at Long Ditton.

I saw *R. glabratus* last summer in several spots around Llanberis—a locality which Babington gives for it—and I give my notes here to supplement the meagre descriptions hitherto available.

Stem purple, furrowed, moderately pubescent, bearing minute stellate hairs and sessile and subsessile glands. Prickles slender, narrow-based, moderate to weak. Leaves yellowish green, 5-nate and incompletely 5-nate, rather plicate, strigose above, rather thickly pubescent beneath at first but not discolorous; finely irregularly denticulate-serrate. Terminal leaflet obovate to suborbicular, subcuspidate, base emarginate or subcordate; twice as long as its stalk. Basal leaflets large and broad, imbricate, their stalks 2 mm. long. Petiole widely grooved below, bearing hooked prickles and many sessile glands; stipules linear-lanceolate.

Flowering branch blunt-angled, glabrous below. Panicle cylindrical, upper branches 2-3 flowered, divided about half-way, pubescent, prickles weak, declining or falciform. Pedicels with many short and nearly straight prickles. Petals fully pink when they unclose, slightly incurved, broadly obovate, notched and clawed. Stamens white (reddening), equalling the greenish styles; at first erect then recurved, not conniving apparently. Anthers cream-coloured, glabrous. Calyx and bracts with stalked glands. Calyx white-felted, segments glandular near their tips, aciculate, loosely reflexed after flowering, then patent; at length completely reflexed.

R. Bakeri F. A. Lees.

Sudre erroneously attributes to this a glabrous stem and round-based leaflets. A good description is given in *E.B. Supp.*; the panicle is, however, broader and more compound than there described. The following notes will enable it to be distinguished from *R. glabratus*.

Stem rather considerably hairy and much branched. Leaves digitate, thickly pubescent and slightly discolorous beneath; unevenly closely dentate with rather deep ovate teeth; petiole bearing strong and rather large curved prickles. Terminal and intermediate leaflets with long falcate and cuspidate points, and cordate or subcordate bases.

Panicle with ascending, cymose, 7-flowered middle branches, broad bracts and bracteoles and subdiscolorous leaves. Rachis felted and villose, with long and strong, declining and falcate prickles, and many sessile glands. Peduncles as a rule unarmed or nearly unarmed. Petals distinctly paler outside, and with a short broad claw. Stamens white, at first not much longer than the green styles but usually lengthening a good deal and conniving over the styles. Calyx segments greenish grey with a white edge, mucronate, broader than in *R. glabratus*. Fruit small, subglobose.

R. mercicus Bagnall.

Sudre says that *R. glabratus* appears to him to be simply a variation of *R. mercicus*. The differences are, I think, rather considerable, and quite warrant the two species being maintained. The following description of *R. mercicus* should be compared with that given above of *R. glabratus*.

Stem green to brown and purple, furrowed only towards the apex, with simple or clustered hairs and occasional short scattered acicles and short-stalked glands. Prickles broad-based, numerous, rather unequal, declining or falcate. Leaves rather large, 5-nate, pedate, leaflets contiguous, green and shortly hairy beneath, teeth ovate, somewhat double towards the apex of the leaflets. Petiole with occasional short acicles and short-stalked glands near the base; stipules linear-lanceolate, with scattered short-stalked glands. Petiole and petiolules with numerous curved prickles. Terminal leaflet broadly oval-obovate, gradually diminished to a short broad point, base entire. Basal leaflets with stalk 3 mm.

Flowering branch angled, slightly furrowed above. Panicle pyramidal, with ascending, cymose, 5-flowered middle branches, and 1-2 simple ovate leaves. Terminal flower long-stalked. Rachis felted and pubescent, with straight, slightly deflexed, moderately strong prickles, very short acicles and short-stalked and subsessile glands. Bracts broad, simple or trifid. Petals obovate, short-clawed, white or nearly white from the first. Stamens much exceeding the styles; anthers glabrous. Calyx segments with attenuate points, pilose and prickly, and with subsessile glands; loosely reflexed. Fruit subglobose, small.

Reduced panicles are racemose, with slender pedicels armed with short acicular prickles.

R. OXYANCHUS Sud.

Two different plants were issued in the *Set of British Rubi* to represent the *R. nemoralis* of the *Handbook* (not of P. J. Müller). That from Branksome Park, Dorset, was named and described by Sudre as *R. oxyanchus*. I have studied this as a living plant in Barnet Wood, Hayes, Kent, and have also seen specimens collected by Mr Britton on Wimbledon Common, Surrey, on the 28th July 1904, as well as specimens from Branksome Park.

The stem is slightly furrowed, conspicuously hairy at first, and is furnished with an occasional stalked gland and pricklet. Leaves pedate, green and glabrescent on both sides, the veins impressed; margin slightly undulate, sharply dentate-serrate, the principal teeth prominent. Petiole short, bearing many small and fine falciform or hooked prickles and broad glandular stipules. Terminal leaflet oval, acuminate, base emarginate, four times as long as its stalk. Intermediate leaflets large, cuneate below, imbricate. Basal leaflets often doubly dentate across their broad apex.

Flowering branch angled throughout. Panicle felted and hairy, with many pale fine declining prickles and subsessile glands. Leaves green beneath, terminal leaflets large, obovate. Panicle often greatly developed and compound; in moderate examples the lowest branches nearly erect, the middle branches deeply divided, sometimes to the base. Pedicels long, ascending. Calyx felted and hairy, green to greyish with a distinct white margin, often aciculate; segments loosely reflexed, very white within. Petals flesh pink, oval-obovate, truncate or retuse, often apiculate, remote, ultimately spreading. Stamens white, connivent, far longer than the greenish or pinkish styles. Anthers and young carpels glabrous.

R. VIRIDICATUS Sud.

The plant from Iford Bridge, S. Hants, also issued in the *Set of British Rubi* to represent *R. nemoralis*, was named and described by

Sudre as *R. viridicatus.* I have not seen this as a living plant, but I have seen specimens from Iford Bridge, and also in Hb. Druce specimens from Barton Common, S. Hants, collected by L. Cumming in 1917, and from Norden Common.

The stem is nearly glabrous and furrowed. Leaves digitate or pedate, glabrous above: at first pubescent, then green and glabrescent beneath; shallowly, subequally denticulate. Leaflets broad and imbricate. Petiole with hooked or falcate prickles and eglandular stipules. Terminal leaflet suborbicular, cuspidate, base emarginate, twice as long as its stalk. Basal leaflets oval, subsessile, small.

Panicle pubescent, eglandular, with rather many falcate prickles. Pedicels short. Upper panicle leaves simple, grey beneath. Calyx segments greyish felted, reflexed in fruit at first, at length clasping. Young carpels glabrous.

This is a smaller plant than *R. oxyanchus*, and has smaller leaves and a more condensed panicle. It has been confused with *R. mercicus* and *R. leucandrus*, as well as with "*R. nemoralis*," *R. plicatus* and *R. dumnoniensis*.

THE STATUS OF ANDROMEDA POLIFOLIA IN NORTH YORKSHIRE.

R. J. Flintoff, F.C.S.

In the *Report of the Botanical Society and Exchange Club* for 1928, vol. viii., part v., p. 630, I drew attention to the discovery, on the 9th June 1924, of one plant of *Andromeda* near Goathland by Miss H. V. Medlicott, and promised that further search would be made. I stated also that Baker in his "Flora of North Yorkshire" gives two stations only for this plant—one on Strensall Common in No. 1 District, the Ouse and Foss area, and the other in or near Balderdale in No. 9 District, the West Tees area. Since 1924 many attempts have been made to find more growths of this plant but without success until 1929. In the light of further experience the reason of these failures is easy to understand, and in this respect it is not necessary to offer any explanation.

On the 22nd May 1929 I received a letter from Captain W. S. Medlicott, of Partridge Hill, Goathland, in which he wrote: "To-day I have had a walk with Jack Rowland (Mr J. Rowland of Goathland) looking for birds. We ate our lunch where *Andromeda* had been found. I told him of my frequent hunts for the Marsh *Andromeda*. Five minutes later he spotted a plant. On looking round we found at least a dozen plants, but rather poor specimens.

A few days afterwards, May 27, Mr W. Raw and I visited this station for *Andromeda*, and after making careful investigation I have no hesitation in stating quite definitely that here it is well established and widely distributed. We counted twenty plants in a limited area, and then did not trouble to count any more, but we saw more plants further away. Therefore the station near Goathland for *Andromeda* has now been well determined, and it is an important one in North Yorkshire. It seemed desirable to obtain reliable data relative to the two stations recorded by Baker, and after no small trouble and many careful enquiries I feel I have learned all the information I can obtain.

THE STRENSALL COMMON STATION.

I am much indebted to my friend, H. J. Wilkinson, of York, the well-known botanist, for the facts which he has given to me. On the 31st of May 1929, Mr Wilkinson wrote:—"*Andromeda polifolia* still grows on Strensall Common, but I am sorry to say it is, in my opinion, on the verge of extinction. In 1881 and 1906, when the members of the British Association visited York, I took some of the Botanists to Strensall. In 1881 five stations were noted, and in 1906 three stations. In 1881 the Government acquired Strensall Common and Towthorpe Common for military purposes. In 1914-18 thousands of troops occupied the Common, cutting trenches, making earthworks, altering the surface in other ways and the character of the land by drainage. In 1879 I could have counted scores of plants of *Andromeda*. Now I might search all day and not get a plant from the only station I know there. I could say the same of Terrington Carr, only more so. I should not expect to find it there." In another letter, dated 7th of June, Mr Wilkinson made this statement:—" But I must come to the conclusion that *Andromeda polifolia* on Strensall Common is practically extinct." In a conversation I had with Mr Wilkinson a few weeks later at Goathland, he told me he would not go so far as to say an odd plant or even a few specimens could not be found at Strensall, but he would be very surprised to learn it was in any sense established there, and knowing how plentiful it used to be he could only confirm his opinion that it was now practically extinct. On the 23rd September 1929, Mr Wilkinson, after learning that four specimens had been found on Strensall Common wrote me a long letter, from which I take the following remarks:—" To say that *Andromeda* on Strensall is extinct when four specimens have been reported in ten years will be considered by some a misrepresentation. But I still consider it a dying or extinct species on Strensall. Forty years ago I could have counted two or three hundred vigorous plants. Now I should think myself very fortunate to find a single dwarfed specimen."

Dr John S. Gayner, of York, has very kindly supplied me with information. On the 28th September 1929 he writes:—" Personally, I have never found the plant, but I have been shown the plant apparently referred to in the first edition of Baker's ' North Yorkshire,'' and generally visit the station every two or three years to note the condition of the plant. I saw it last year, perhaps covering an area of six square feet, and am of the opinion that this represented a large relative increase on the amount of the plant to be seen in that station four years ago. Further, I have been recently informed by an excellent field botanist, perfectly familiar with *Andromeda*, that he has found four small plants of it in another part of Strensall Common." And subsequently, on 2nd October 1929, he gave me a definite expression of opinion. " On Strensall Common I should certainly judge *Andromeda* to be a vanishing species. Baker's plant on the Stockton side of Strensall was going, but revived under the influence of the cold summers from 1922-1927. And I expect these are responsible for the appearance of the new plants. Whether they will endure after the heat and drought of this summer is very doubtful."

In the summer of 1929 Mr H. Britten, of York, found four small plants of *Andromeda* on Strensall Common. Mr Britten has been very kind in writing to me several long and very interesting letters, and I regret very much that limitations of space prevent my including them in their entirety in this note. I shall therefore content myself by quoting the following pertinent extracts:—4th October 1929—" I know nothing of Baker's locality, but I learn from Dr Gayner that the plant still occurs there. I have looked for it frequently on Strensall, but I did not find it until this year when I discovered several plants in one locality. I did not think any further about this because I did not know of the rarity of the plant until I saw your note in the Report of the Botanical Society. On mentioning the matter to Dr Gayner I found that my locality was a considerable distance from Baker's, and in a totally different part of the Common." And again, on the 25th of October 1929, Mr Britten stated:—"As regards the status of *Andromeda* on Strensall I am not in a position to judge whether it is decreasing, because my knowledge of the district is limited to the last four years. I learn the plant still persists and is slowly increasing in Baker's station. Where I found the plant I noted several specimens in an area of 20-30 square yards, and from my previous experience of *Andromeda* I should say that it is truly at home."

The information I have been able to glean relative to *Andromeda polifolia* on Strensall Common is not quite so definite as I could desire. So far as I have been able to ascertain the facts the truth appears to be that a few small specimens are still to be found there. I have been unable to obtain any data which reflect doubt on the accuracy of Mr Wilkinson's view to the effect that *Andromeda* is nearly, or practically, extinct on Strensall Common. It must be remembered that this opinion is based on a life-time's experience and expresses the great difference between the frequency of the plants many years ago and its rarity at the present time.

THE BALDERDALE STATION.

I have not been able to get such precise information relative to the plant here. But my thanks are due to Mr Thos. J. Foggitt, of Thirsk; Mr John E. Nowers, of Darlington, and Mr J. P. Robson, of Barnard Castle, for the trouble they have taken in helping me.

On the 23rd of June 1929, Mr Foggitt wrote:—"My father, W. Foggitt, found *Andromeda* on the moorhead of Balderdale to the West of Goldesborough, about 1½ miles south of the Junction of the Black Beck and the Balder." And on the 25th of June he wrote a further note to me:—"Since my father's discovery of *Andromeda* in Balderdale in July 1885 I have not seen it there, nor heard of its being found in that locality."

Mr Nowers has been unable to learn anything of this plant after making many enquiries from local botanists. In his last letter to me, dated the 26th of June 1929, he states:—"I am very sorry I cannot get any information re *Andromeda* at Balderdale from any of our members." And in a previous letter he stated:—"I have been making enquiries among some likely members of the Field Club, but none of them knows it there."

Mr J. P. Robson knows nothing concerning this plant at Balderdale. From a consideration of this evidence I feel justified in concluding that the two stations given by Baker are very doubtful now, and probably bad records for the year of grace 1929. Therefore our Goathland station is the only one in North Yorkshire where *Andromeda polifolia* grows as an established plant at the present time. I have taken care and trouble in trying to collect reliable data, yet it is quite possible my information is far from complete. I shall, therefore, be extremely obliged if anyone, who is acquainted with the plant in the North Riding, will either confirm or correct my statements. I make this request because it would appear this procedure is the only likely method whereby further particulars can be ascertained. From a botanical standpoint the subject is important, and I should like to add that because of the rarity of this plant in North Yorkshire those of us who know where it grows will not give to anyone more detailed particulars than are contained in this note. We desire to protect the plant.

THE BRITISH EROPHILA.

G. Claridge Druce.

Mr J. Gilbert Baker, our one time Secretary, in the *Report of the Thirsk Botanical Exchange Club* (see *Phytologist*, 501, 1858), gave brief diagnoses of *E. brachycarpa*, *E. glabrescens*, *E. hirtella*, *E. stenocarpa* and *E. majuscula*, the last two being named by M. Alex. Jordan himself, who was a most careful and intensive student of the micro-forms of this and of other critical genera. In the *Diagnoses D'Espèces Nouvelles ou Inconnues*, pp. 207-244, 1864, he describes 53 species. These he cultivated for many years, and found that they bred true. In 1866-8, Mm. Jordan and Fourreau produced the magnificent volume of *Icones ad Floram Europae*, with 200 coloured figures, at 300 francs, which contained 5 plates of 20 figures of Erophilas. These are cited in the forthcoming account.

Rouy and Foucaud (*Flore de France*) group all the 56 Jordanian species from France under eight names in the genus *Draba*. 1—Majuscula, under which are *occidentalis*, *brevifolia* and *curtipes*. 2—Lanceolata (Krockeri Andrz. and stenocarpa Jord.), with the Jordanian *tenuis*, *subtilis*, *psilocarpa* as varieties, and *macrocarpa* B. & H. as a form. 3—Leptophylla, with *sparsipila*, *vestita*, *affinis*, *cinerea*, *propinqua* as varieties, and two forms, *dentata* and *furcipila*, including *serrata*. 4—Vulgaris, including *brevipila* and *rigidula* as varieties, and *claviformis*, *cuneifolia* and *Ozanonis* as forms. 5—Spathulata Hoppe (obovata Jord.), with varieties *confinis*, *Andegavensis*, *Lugdunensis*, *fallacina*, *Bardini*, *breviscapa*, *Cabillonensis*, *lucida*, *subintegra*, and three forms, *muricola*, *pyrenaica* and *rurivaga*. 6—Praecox, with varieties, *brachycarpa* and *decipiens*, and forms, *subrotunda* and *Revelieri*. 7—Glabrescens, with varieties *medioxima*, *micrantha*, *glabrescens* = *oblongata*, *rubella*, *procerula*, *campestris*, *ambigens*, *spathulifolia*, *Vivariensis*, *chlorotica*, *lepida*, *patula* and *iodophylla* Briquet, and 2 forms, *virescens* and *subnitens*. 8—Hirtella, with var. *corsica*.

In the *Bulletin de la Société Botanique de France*, xiii., n. 5, 1913, M. Isidore Maranne enumerated 68 species (see *Rep. B.E.C.*, 88, 1914), where a summary and clavis are given, from which we reprint a part. He grouped them under 8 sections, following Rouy and Foucaud:—1, Glabrescens; 2, Hirtella; 3, Praecox; 4, Spathulata; 5, Vulgaris; 6, Leptophylla; 7, Lanceolata; 8, Majuscula.

CLAVIS IN THE FLORE DE FRANCE.

1	H. all or nearly all simple (rarely mixed with bifid); sil. ellipt. or obl.; loc. 14-24 seeded	2.
	H. all or nearly all bifid, some trifid, rarely with a few simple h.	3.
2	Ls. broadish, ov. or obl.-lanc., spreading (flat to the ground); sil. ellip. or obl., slightly atten. or not at base	1 *glabrescens.*
	Ls. lanc., erect or ascending; sil. obl., much atten. at base ...	2 *hirtella.*
3	Sil. ov.-sub-orb. or obov.-rotund., very obt.; loc. 8-24	4.
	Sil. of a different shape	5.
4	Fl. sm. (3); lobes of pet. nearly or quite contig.; sil. ov.-sub-orb., 3 long × 2.5 broad, rounded at top	3 *praecox.*
	Fl. large (3.5-4); lobes of pet. divaricate or divergent; sil. ellip.-obov., 4-7 long × 2.5-3 broad	4 *spathulata.*
5	Pl. ± robust, with short bi- or trifid h.; fl. large; sep. ov.-rotund.; sil. elongate, large, ob. or obl.-lanc.; loc. 30-40 ...	8 *majuscula.*
	Pl. ± slend., mostly bifid, a few simp. h.; sep. ov. or obl.; loc. 16-24	6.
6	Ls. lanc. or lin.-lanc.; sil. obl.	6 *leptophylla.*
	Ls. ov.-lanc. or lanc.; sil. narrow, lanc. or lin.-obl.	7 *lanceolata.*
	Ls. broader, ov. or ellip.; h. fairly long; sil. obl. or sub-lanc.	5 *vulgaris.*

Division I.

Hairs all or nearly all simple, rarely a few bifid hairs.

Section I.—Glabrescens—St. slend., short, 6-10 cm.; Ls. ± narrow, lanc., obl., or ov.-lanc., with spr. lamina, often recurved at apex; sil. medium size, ellip. or ov.-obl.; loc. 20-24 seeded. 1, *Erophila virescens* Jord. Diagn., 207; 2, *E. nana* Sudre Bull. Ass. Pyren., 5, 1897-8; 3, *E. subnitens* Jord., *l.c.*, 208; 4, *E. spathulifolia* Jord., *l.c.*, 5, *E. vivariensis* Jord., *l.c.*, 210; 6, *E. campestris* Jord., *l.c.*; 7, *E. ambigens* Jord., *l.c.*, 211; 8, *E. medioxima* Jord. in Billot Fl. Gall. et Germ. Exsicc., 1818 (*E. glabrescens* Jord. p.p. Pug. 10, 1852); 9, *E. micrantha* Jord. Diagn. 213; 10, *E. roseola* Sudre Le Monde des Pl., 17, 1912; 11, *E. oblongata* Jord., *l.c.*, 214 (*E. glabrescens* Jord. p.p., var. *erratica* (R. & F.)); 12, *E. rubella* Jord., *l.c.*, 215; 13, *E. procerula* Jord., *l.c.*; 14, *E. chlorotica* Jord., 216; 15, *E. lepida* Jord., *l.c.*, 217; 16, *E. euchloa* Sudre, *l.c.*; 17, *E. patula* Jord., *l.c.*, 217; 18, *E. iodophylla* Briquet (*D. glabra*, var. R. & F. 229); 19, *E. minuscula* Sudre, *l.c.*

Section II.—Hirtella—St. slend.; ls. lanc. or ov.-lanc., nearly erect; fl. large (5 mm.); sil. ellip., obt. or obov., ± atten. at base, medium size (6); loc. 20-24. 20, *E. hirtella* Jord. Pug. 10; 21, *E. corsica* Jord. in Magn. Scrin. Fl. Sel. 187 (*D. hirtella*, var. *Debeauxii* R. & F. 231.

Division II.

Hairs all or nearly all bi-trifid, rarely a few simp. hairs.

Section III.—Praecox—St. slend.; ls. ov. or broadly lanc.; h. mostly bifid, a few simp.; sil. sub-orb. or broadly ov., usually sm., mostly rounded at base and at top; loc. 16-24; 22, *E. brachycarpa* Jord. Pug., *l.c.*, 9 (*Draba verna*, var. *rotundata* Neilr. Fl. Nied. Oester. 752, 1866); 23, *E. praecox* DC. Syst. Nat. ii., 357, 1821; 24, *E. Girodi* Sudre, *l.c.*, 3, 1906-7; 25, *E. subrotunda* Jord. Diagn. 220; 26, *E. decipiens* Jord., *l.c.*; 27, *E. Revelieri* Jord., *l.c.*

Section IV.—SPATHULATA—St. slend., few (1-3); ls. broadly lanc. or nearly ov.; h. mostly bifid, a few trifid or simp.; pet. sm., scarcely longer than sep.; sil. broadly obov. or ellip., lanc., atten. at base, rounded or sub-atten. at top, of medium size, but mostly sm. (4-7); loc. 16-24; 28, *E. obovata* Jord., *l.c.*, 221; 29, *E. confinis* Jord., *l.c.*, 222; 30, *E. breviscapa* Jord., *l.c.*; 31, *E. subintegra* Jord., *l.c.*, 223; 32, *E. pyrenaica* Jord., *l.c.*, 224 (*D. muricola*, var *Jordani* R. & F., *l.c.*, 227); 33, *E. muricola* Jord., *l.c.*, 224; 34, *E. rurivaga* Jord. Diagn. 225; 35, *E. Cabillonensis* Jord., *l.c.*, 226; 36, *E. lucida* Jord., *l.c.*; 37, *E. Andegavensis* Jord., *l.c.*, 227; 38, *E. Lugdunensis* Jord., *l.c.*, 228; 39, *E. fallacina* Jord., *l.c.*; 40, *E. Bardini* Jord., *l.c.*, 229.

Section V.—VULGARIS—St. slend.; ls. ov. or ov.-lanc.; h. short, bifid or trifid; sil. ellip.-obl. or obl.-sub-lanc., 5-6; loc. 16-24; 41, *E. claviformis* Jord., *l.c.*, 230; 42, *E. cuneifolia* Jord., *l.c.* (*Draba claviformis*, var. *cuneata* R. & F., *l.c.*); 43, *E. vulgaris* DC. Syst. ii., 356, 1821, sensu stricto; 44, *E. Ozanoni* Jord., *l.c.*, 231.

Section VI.—LEPTOPHYLLA—St. slend.; ls. lanc. or lin.-lanc., shortly pubescent; h. usually bifid, the others simp.; pet. distinctly larger than sep.; sil. 5-7, obl.; loc. 16-24; 45, *E. dentata* Jord., *l.c.*, 232; 46, *E. furcipila* Jord., *l.c.*, 233; 47, *E. serrata* Jord., *l.c.* (*D. furcipila*, var. *serrata* R. & F.); 48, *E. leptophylla* Jord., *l.c.*, 234; 49, *E. sparsipila* Jord., *l.c.*, 235; 50, *E. vestita* Jord., *l.c.*; 51, *E. affinis* Jord., *l.c.*, 236 (*D. leptophylla*, var *australis* R. & F., *l.c.*, 223); 52, *E. cinerea* Jord., *l.c.*, 237; 53, *E. propinqua* Jord. in Bull. Bot. Soc. Fr. t. xviii., 920; 54, *E. brevipila* Jord. Diagn., 237; 55, *E. rigidula* Jord., *l.c.*, 238 (*D. vulgaris*, var. *rigidula* R. & F.); 56, *E. Charbonnelii* Sudre, *l.c.*, 4, 1907-8.

Section VII.—LANCEOLATA (*Draba lanceolata* Neilrich, *l.c.*, 742)—St. thin, slend., usually numerous; ls. lanc. or ov.-lanc.; h. short, bifid or trifid; pet. slightly longer than sep.; sil. ± large, lanc., lin. or lin.-obl.; loc. 30-36; 57. *E. stenocarpa* Jord. Pug. 11, 1852 (*E. americana* DC., *l.c.*, 1821); 58, *E. Krockeri* Andrz. En. Pl. Volh., 82; 59. *E. propera* Sudre, *l.c.*, 5; 60, *E. aurigerana* Sudre, *l.c.*; 61. *E. tenuis* Jord. Diagn., 239; 62, *E. subtilis* Jord., *l.c.*, 240; 63. *E. psilocarpa* Jord., *l.c.*, 241; 64, *E. rubrinaeva* Jord., *l.c.*

Section VIII.—MAJUSCULA—St. 6-20 cm., fairly robust; h. short, bitrifid; ls. mostly ov., broad; pet. much longer than sep; sil. large, obl., rounded at the top; loc. 30-40; 65, *E. curtipes* Jord., *l.c.*, 252; 66, *E. occidentalis* Jord., *l.c.*, 243; 67, *E. brevifolia* Jord., *l.c.*; 68, *E. majuscula* Jord. Pug., 11 (*E. verna*, var. *majus* R. & F.).

SCHULZ' MONOGRAPH.

In 1927 (*Das Pflanzenreich*, Heft iv., 105. pp. 343-372, Prof. O. E. Schulz contributed a very valuable monograph on this genus. There is a very complete synonymy but, owing to political conditions, comparatively few British examples were seen. He groups them under 7 species, of which only 3 are recorded for Britain—VERNA, BOERHAAVII and PRAECOX. He gives the following description:—

A. Folia spathulata. Ovarium ovulis 24-60. Semina 0.3-0.5 mm. longa.

a. Folia supra pilis minutis tenuibus bifurcatis et stellatis obtecta. Semina 0.3-0.4 mm. longa.

a. Siliculae elongatae, obverse lanceolatae vel lineares. Ovarium 44-60 ovulatum.

I. Siliculae oblanceolatae, scilicet basin versus attenuatae, in pedicellis elongatis .... 1 *E. verna.*

II. Siliculae lineares, aequilatae, in pedicellis pro rata brevibus .... 2 *E. macrocarpa.*

b. Siliculae abbreviatae, breviter obovoideae vel suborbiculatae. Ovarium 24-48 ovulatum .... 3 *E. Boerhaavii.*

b. Folia supra pilis majusculis crassiusculisque plerisque simplicibus nonnullis bifurcatis ± intermixtis vestita. Semina 0.5 mm. longa. Ovarium ovulis 24-40.

I. Siliculae breviter obovoideae .... 4 *E. praecox.*

II. Siliculae anguste ellipsoideae vel oblongo-lineares ... 5 *E. setulosa.*

B. Folia anguste linearia. Ovarium ovulis 10-16. Semina 0.75-1 mm. longa.

a. Siliculae obovoideae, 3·5 mm. longae, 2-2.5 mm. latae ... 6 *E. minima.*

b. Siliculae anguste ellipsoideae, 4-5 mm. longae, 1.5-2 mm. latae .... 7 *E. Gilgiana.*

Our regretted member, C. E. Salmon, with E. Gilbert Baker, gave the results of Prof. Schulz's examination of the British Erophilas in a valuable paper which appeared in the *Journal of Botany*, 234, 1928, when Prof. O. E. Schulz named nov. var. *Salmonii* from Essex.

EROPHILA VERNA.

EROPHILA VERNA E. Meyer in Preuss. Pflanz., 179, 1839 = DRABA VERNA L. = EROPHILA VULGARIS DC. Syst., ii., 356, 1821. Schulz Mon. 345, fig. 33, a-n.

Europe, Asia, N. Africa, N. America, Japan.

Scapi singuli vel complures, erecti, sed laterales adscendentes, fructiferi, 10-20 cm. longi, inferne pilis brevibus, c. 0.25 mm. longis, stipitato-bifurcatis et stipitato-substellatis, densiuscule obsiti, pallide violacei, superne glabrescentes, virescentes. *Folia* late lanceolata vel elliptica, apice acutiuscula, margine integra vel apicem versus ± profunde 1-2 dentata = f. *pinnatifida* Wirtgen ap. O. Kuntze Taschenfl. Leipzig, 181, 1867, ad basin in petiolum latum sensim angustata, 1-1.5 cm. longa, supra medium c. 0.5 cm. lata, praesertim supra et margine pilis bifurcatis stellatisque densiuscule obsessa, ad petiolum pilis simplicibus longioribus perpaucis ciliata, interdum basin versus rubro-maculata vel omnino rubescentia. *Racemi* 10-20 flori. Pedicilli floriferi, 6-3 mm. longi, erecto patentes, capillares. *Sepala* 2 mm. longa, dorso pilis simplicibus manifestis, 0.5 mm. longis et stipitato-bifurcis hirta, alba, tandem violaceo-marginata vel plane violacea = f. *rubrocalycina* O. Kuntze Taschenfl. Leipzig, 181, 1867. *Petala* 2.5 mm. longa. *Stamina* 1.5-1.75 mm.; antherae 0.25

mm. longae. *Ovarium* ovulis 50-60. *Siliculae* in pedicillis ex axi valde flexuoso erecto patentibus vel recurvatis elongatis (4.5-) 2.5-1 cm. longis imis saepe non procul a foliorum rosella ortis continuae oblongo-ellipsoideae, 6.5-9 mm. longae, compressae, supra medium 2-2.5 mm. latae, apice rotundato vix styliferae, basin versus angustatae, viridulae, nonnumquam rubescentes, raro subcontortae. *Semina* numerosa, minima, ovoidea, 0.3-4 mm. longa.

Jersey. St Aubin's, *Piquet*, 1850, in *Hb. Druce*.

17—Surrey. Witley [1220], 1894, *E. S. Marshall* in *Rep. B.E.C.*, 434. 1894, as *vulgaris*; Woking, *Miss M. Saunders* in *Hb. Druce*; Gomshall, 1893, *C. E. Salmon*, see *Journ. Bot.*, 234, 1928.

20—Herts. Fells' Nurseries [62]; between Wilbury Hill and Ickleford [70], *J. E. Little* in *Rep. B.E.C.*, 449, 1913.

22—Berks. Hinksey, 1882, *Druce*.

23—Oxford. Chinnor, 1884; Wigginton, 1915, *Druce*.

24—Bucks. Ivinghoe Beacon, 1923, *Druce*.

29—Cambridge. *H. Baber*, 1837, ex *O. E. Schulz*, with *minutissima*.

32—Northants. Potter's Pury, 1876, *Druce*.

33—Gloster E. Kineton Thorns, *H. J. Riddelsdell* in *Rep. B.E.C.*, 557, 1916.

35—Monmouth. Portskewet [2828], mixed specimens, *E. S. Marshall* in *Journ. Bot.*, 238, 1928.

43—Radnor. Llandrindod Wells, *Miss C. E. Palmer*, 1898, in *Hb. Druce*, ad f. *minutissima* (Griseb.) spectans, O.E.S.

57—Derby. Castleton, *Druce*.

90—Angus. The Lurgies, near Montrose [52], *Corstorphine*.

108—Sutherland W. Near Loch Loyal Lodge, *Druce*.

Dublin. Portmarnock, 1869, *Carroll*.

Forma RUBRO-CALYCINA O. Kuntze.

11—Hants S. Winchester, *Druce*.

24—Bucks. Lane End, 1896, *Druce*, ad var. *cabillonensis* (Jord.) O.E.S. vergens.

A. Section.

FLEXUOSAE Rosen in Cohn, Beitr. Biol. Pfl., x., 392, 1911. Stem slender, gracile, the fruiting portion distinctly serpentine-flexuous.

Var. BARDINII (Jord.) O. E. Schulz = E. BARDINII Jord. Diag., 229, 1864. Jord. and Fourr. Ic., i., t. iv., fig. 13, 1866. Petals 2.5 mm. × 1.5 mm., rose-coloured. Pod 5 mm. × 2-2.5 mm. Leaves subentire or very slightly toothed, 9 mm. × 5.6 mm., oblanceolate, narrowed at base.

19—Essex N. Elmstead [1399], *G. C. Brown* in *Rep. B.E.C.*, 808, 1919, as *affinis*, in *Hb. Druce*; Ross, near Saffron Walden [49141B], *C. B. Clarke* in *Hb. Deless.*; Colchester, *G. C. Brown* in *Hb. Deless.*; Alphamstone, *G. C. Brown* in *Rep. B.E.C.*, 883, 1915.

23—Oxford. Yarnton [41211], 1915, *Druce*.

Var. AFFINIS (Jord.) O. E. Schulz = E. AFFINIS Jord. Diag., 236, 1864. Petals pale rose, 3 mm. long. Pod 6 mm. × 2 mm. France only in *O. E. Schulz.*

19—Essex. Sea wall by Colne [1938], *G. C. Brown* in *Rep. B.E.C.*, 826, 1922, as *majuscula*, in *Hb. Druce.*
20—Herts. Ashbrook St Ippolyts [83 p.p.], *J. E. Little* in *Hb. Druce.*
35—Monmouth. Portskewet [2828], mixed specimens, *E. S. Marshall* in *Hb. Druce.*

[Var. GLABRA (Beck.) O. E. Schulz = E. VULGARIS, f. GLABRA Beck. Fl. Nied.-Oestr., 472, 1892. Stem and sepals glabrous. Lower Austria only.]

[Var. PINGUIS (T. M. Fries) O. E. Schulz = DRABA VERNA, b. PINGUIS T. M. Fries in Thed. Bot. Not., 49, 1852. Leaves fleshy, with rigid short hairs. S. Sweden, Smaland.]

[Var. GLABRESCENS O. E. Schulz. Leaves shortly pilose. Near San Isidro-Leon, Spain. 1864, *E. Bourgeau.*]

Var. CLAVIFORMIS (Jord.) O. E. Schulz = E. CLAVIFORMIS Jord. Diag., 230, 1864 = E. OZANONI Jord., *l.c.*, 231, and Jord. and Fourr. Ic., t. v., fig. 17. Petals 3 mm. long. Upper leaves often deeply dentate. France and Switzerland.

31—Hunts. Warboys Turf Fen, 1880, *A. Fryer* in *Hb. Druce.*

Var. CUNEIFOLIA (Jord.) O. E. Schulz = E. CUNEIFOLIA Jord. Diag., 230, 1864. Jord. and Fourr. Ic., t. v., fig. 18. Schulz, fig. 33. Leaves longly attenuate at base.

7—Wilts N. Burridge Heath, *C. P. Hurst* in *Rep. B.E.C.*, 212, 1920, as *verna*, in *Hb. Druce.*
23—Oxford. Hook Norton to Wigginton [6], *H. J. Riddelsdell* in *Rep. B.E.C.*, 1914, in *Hb. Druce.*
66—Durham. Near High Force [4466] up to 1600 feet, *E. S. Marshall* in *Rep. B.E.C.*, 448, 1928, as *virescens*, in *Hb. Druce.*

Var. SALMONI O. E. Schulz in Journ. Bot., 235, 1928. Folia spathulata; lamina oblongo-elliptica, acutiuscula, integra vel parcissime dentata, in petiolum aequilongum vel longiorem angustata. Differs from *cuneifolia* in its shorter petals.

19—Essex N. Wall between Great Saling and Bardfield, April 14, 1925, *C. E. Salmon* in *Journ. Bot.*, 236, 1928.

Var. SPARSIPILA (Jord.) O. E. Schulz = E. SPARSIPILA Jord. Diag., 235, 1864 Leaves with only scattered hairs. France, *Schulz.*

17—Surrey. Reigate, *C. E. Salmon* in *Journ. Bot.*, 236, 1928.
20—Herts. St Ippolyts [83], *J. E. Little* in *Rep. B.E.C.*, 117, 1914, in *Hb. Druce.*

32—Northants. Dry places, Kirby Hall, 1916, *G. Chester* in *Rep. B.E.C.*, 557, 1916, as *praecox*.
65—Yorks N.W. Near High Force [4465], 1918, *E. S. Marshall*, as *virescens*. See *Journ. Bot.*, 236, 1928.
66—Durham. Near High Force [4465], 1918, *E. S. Marshall*, as *virescens*. See *Journ. Bot.*, 236, 1928.

[Var. STELLIGERA (Rosen) O. E. Schulz = E. STELLIGERA Rosen in Cohn, *l.c.*, 392, 1911. Petals medium size. Leaves few, large. Breslau, Germany.]

[Var. VIOLACEO-PETIOLATA (Lotsy) O. E. Schulz = E. VIOLACEO-PETIOLATA Lotsy in Baunier Rec. Trav. Bot. Néerl., xx., 26, 1923. Petals 4 mm. long. Leaves large, flaccid. Holland.]

Var. INCONSPICUA (Rosen) O. E. Schulz = E. INCONSPICUA Rosen in Cohn, Beitr. Biol. Pfl., x., 392, fig. 5, 7a, 1911. Petals 1.5 mm. long. Leaves minute. Europe.

11—Hants S. Wolmer Forest, ap. 1888, *Canon Vaughan* in *Hb. Druce*.
17—Surrey. Richmond, *C. B. Clarke* in *Hb. Deless.*
19—Essex N. Great Lodge, 1870, *H. E. Fox* in *Hb. Druce*.
23—Oxford. Oxford, 1870, *H. E. Fox* in *Hb. Druce*.
24—Bucks. Great Brickhill, *Druce*.
25—Suffolk E. Horninger, *H. E. Fox* in *Hb. Druce*.
55—Leicester. Glooston, 1910, *A. R. Horwood* in *Hb. Druce*.
58—Cheshire. Moreton, *Mason* in *Hb. Druce*.
63—York. Grassington, 1917, *J. Cryer* in *Hb. Druce*.
66—Durham, Teesdale, 1883, *H. E. Fox* in *Hb. Druce*.

Var. RADIANS (Rosen) O. E. Schulz = E. RADIANS Rosen in Ber. Deutsch. Bot. Gesells., xxviii., 244, 1910. Leaves large, in a strong rosette. Germany, France, Greece.

17—Surrey. Wisley [O.18], 1915, *Druce*.
39—Stafford. Alstonfield, 1872, *W. H. Purchas* in *Hb. Druce*.
64—Yorks W. Arncliffe, 1913, *C. Waterfall* in *Rep. B.E.C.*, 808, 1913, as *majuscula*, in *Hb. Druce*.
66—Durham. Middleton-in-Teesdale, specimens 24 cm. high, *Druce*.

[Var. SERRATA (Jord.) O. E. Schulz = E. SERRATA Jord. Diag., 233, 1864. Leaves oblanceolate, remotely serrate-dentate towards the apex. Petals 2.5-3 mm. long. France, Germany, N. America.]

[Var. RUBRINAEVA (Jord.) O. E. Schulz = E. RUBRINAEVA Jord. Diag., 341, 1864. Jord. and Fourr. Ic., t. iv., fig. 16. Germany.]

[Var. ELONGATA (Rosen) O. E. Schulz = E. ELONGATA Rosen in Bot. Zeit., xlvii., 600, 1889. Plant large. Stem sub-strict. Switzerland, Bosnia.]

[Var. ANGUSTIFOLIA (Lej. & Court.) O. E. Schulz = E. VULGARIS, var. ANGUSTIFOLIA Lej. & Court. Choix de Pl., n. 364, 1823-5 = E. LEPTOPHYLLA Jord. Diag., 234, 1864. Jord. and Fourr. Ic., t. iii., fig. 10. Leaves linear, entire or sub-dentate. Petals 3.5 mm. long. France, N. America.]

[Var. DENTATA (Jord.) O. E. Schulz = E. DENTATA Jord. Diag., 232. Jord. and Fourr. Ic., t. iii., fig. 9. Leaves linear-lanceolate, in the upper part deeply and acutely toothed. Petals 4 mm. long. Germany.]

Var. GRAMINEA (Rosen) O. E. Schulz = E. GRAMINEA Rosen in Bot. Zeit., xlvii., 589, 1899. Leaves linear, entire or scarcely denticulate at the upper part. Petals 4 mm. long. Europe, Greenland, N. America. Not given for Britain by Schulz.

12—Hants N. Wall at Wyatt's Farm, Alton, 1884, *Canon Vaughan* in *Hb. Druce*.

19—Essex N. Twinstead, *Druce*.

23—Oxford. Between Hook Norton and Wigginton [6], *H. J. Riddelsdell* in *Rep. B.E.C.*, 118, 1914, as *stenocarpa*; Signet, 1906, *Druce*.

32—Northants. Kingsthorpe, 1873, *Druce*.

[Var. CHLORINA (Rosen) O. E. Schulz = E. CHLORINA Rosen in Cohn, *l.c.* Germany and France.]

Var. OEDOCARPA (Drabble) O. E. Schulz = E. OEDOCARPA E. Drabble in Journ. Bot., 45, 1926. Stems solitary or few, 2-5 cm. long. Leaves oblanceolate, 2-6 mm. long, entire or shortly toothed. Petals 2.5 mm. long. Pods narrowly obovate-lanceolate, 3-4 mm. × 2-2.5 mm., roundish. Seeds in each loculus 14-16.

5—Somerset N. Cheddar Gorge, 1929, *W. D. Miller*.

14—Sussex E. Bright Downs, *H. E. Fox*, 1860, in *Hb. Druce*.

16—Kent W. Old wall at Eltham, 1867, *H. E. Fox* in *Hb. Druce*.

19—Essex N. The Moors, Alphamstone [91], *G. C. Brown*, as *pyrenaica*, in *Hb. Druce*.

20—Herts. St Ippolyts, as *leptophylla*, ex *J. E. Little*, cult. at Walton, S. Lancs, by *J. A. Wheldon*; Codicote High Heath, April 1912, *J. E. Little* in *Hb. Druce*. Thought to be *decipiens* by Wheldon in *Rep. B.E.C.*, 450, 1913.

22—Berks. Cothill, Marcham, 1929, *Druce*.

28—Norfolk W. Old ant-hills, Ovington [98], *F. Robinson* in *Hb. Druce*, in *Rep. B.E.C.*, 314, 1915. Named *virescens* by Marshall and *brachycarpa* by Wheldon.

57—Derby. Ashover, 1914, *E. Drabble*. Schulz, 351.

58—Cheshire. Wallasey, 1907, *E. Drabble*. Schulz, 351.

66—Durham. On the road opposite High Force Hotel, 1883, *H. E. Fox* in *Hb. Druce*.

90—Angus. Montrose [50 p.p.], *Corstorphine* in *Hb. Druce.*
105—Ross W. Inverbroom, *Lady Fowler* in *Hb. Druce.*

Forma MINUTISSIMA (Griseb.) O. E. Schulz.
20—Herts. Mardley Heath [53], *J. E Little* in *Rep. B.E.C.*, 450, 1913, in *Hb. Druce.*

Var. CONFINIS (Jord.) O. E. Schulz = E. CONFINIS Jord. Diag., 222, 1864 = E. VESTITA Jord., *l.c.*, 235 = E. CINEREA Jord., *l.c.*, 237 = DRABA VERNA Sm. Eng. Bot., t. 586, 1799, non L. Jord. and Fourr. Ic., t. iii., fig. 11. Petals 2.5 mm. long. Pods 5-6 mm. × 2-2.5 mm. Ovary 36-50 seeds. Europe; no British locality cited.
24—Bucks. Saunderton, 1895, *Druce.*
35—Monmouth. Limestone quarry, Portskewet [2828], April 11, 1904, *E. S. Marshall* in *Hb. Druce.* Mixed specimens, " Haec specimina ad *E. verna*, var. *confinis* pertinent " Schulz. Included in the gathering was *E. Boerhaavii*, f. *uniflora.*

Var. CABILLONENSIS (Jord.) O. E. Schulz = E. CABILLONENSIS Jord. Diag., 226, 1864 = E. BREVIPILA Jord., *l.c.*, 237 = E. CONFERTIFOLIA Baunier. Petals 1.75-2 mm. long. Pods 5-6 mm. × 2.75 mm. Europe.
12—Hants N. Odiham, 1883, *Miss C. E. Palmer* in *Hb. Druce.*
13—Sussex W. Downs above Rackham and Amberley [2676], *E. S. Marshall* in *Rep. B.E.C.*, 1902.
14—Sussex E. Brighton Race Course, 1905, *T. Hilton* in *Hb. Druce.*
15—Kent E. Shingle beach, Walmer, 1920, *H. E. Fox* in *Hb. Druce*, " ad f. *minutissima* spectans."
17—Surrey. Wimbledon, 1820, *W. Blake* in *Hb. Druce.* Milford, 1898, *E. S. Marshall* in *Rep. B.E.C.*, 566, 1898, as *stenocarpa.* Lady Davy's garden, Pyrford, 1910, *Druce.* Reigate Heath, 1897, *C. E. Salmon.* Farnham [46701B], *C. B. Clarke* in *Hb. Deless.*
19—Essex N. Bank, Alphamstone, *G. C. Brown* in *Rep. B.E.C.*, 808, 1919, as ? *propinqua.*
20—Herts. Wall of West Mill, Hitchin, *H. C. Littlebury.* See *Journ. Bot.*, 236, 1928.
22—Berks. Cothill, 1915; Frilford, 1929, *Druce.*
23—Oxford. Woodcote, 1882; in arable ground, Charlbury, 1885; Cuxham [O.11]; Binsey, 1894; Bletchingdon, 1905; Broughton Road, Banbury, 1872; Elsfield, 1895. *Druce.*
24—Bucks. Saunderton Station-yard, *H. Clarke* and *Druce.* Brickhill, 1897, *Druce.*
26—Suffolk W. Thetford, 1886, *H. E. Fox* in *Hb. Druce.*
28—Norfolk W. Watton [97], *F. Robinson* in *Rep. B.E.C.*, 314, 1915, in *Hb. Druce.*
32—Northants. Barby, *Druce.*
33—Gloster E. Fairford [2041], *Druce* in *Rep. B.E.C.*, 1904. Westonbirt, *Druce.*

41—Glamorgan. Barry Island, 1905, *H. J. Riddelsdell*. Thought to be *inflata* by *E. S. Marshall* in *Rep. B.E.C.*, 155, 1905.
50—Denbigh. Top of old walls, Bwlch Gwyn, Wrexham, *C. Waterfall* in *Rep. B.E.C.*, 1925, " ad *oedocarpa* vergens."
57—Derby. Brassington Rocks, *W. R. Linton* in *Rep. B.E.C.*, 1900, as *vulgaris*, in *Hb. Druce*. Thought by Marshall to be *stenocarpa*.
65—York N.W. Top of Cronkley Fell [Y.119], *Lousley* in *Rep. B.E.C.*, 563, 1927.
66—Durham. High Force, Teesdale, 1919, *Druce*.
83—Edinburgh. Edinburgh, *T. B. Bell*, 1838, ex *Schulz*.
90—Angus. Field-side near Lunanhead [53], *Corstorphine* in *Rep. B.E.C.*, 118, 1914; edge of salt marsh, Montrose [50], *Corstorphine*, *l.c.*, 116, 1914. Balnaboth; Inchrory, 1929, *Druce*.
108—Sutherland W. Pebbly path at Loch Loyal Lodge [2418], *E. S. Marshall* in *Rep. B.E.C.*, 621, 1900, as a form of *inflata* in *Hb. Druce*. "Ad formam *minutissima* (Griseb.) O. E. S. vergens."

Forma MINUTISSIMA (Griseb.) O. E. S.
23—Oxford. Cuxham Mill, *Druce*.
89—Perth E. Glen Shee, 1892, *Marshall*.

Var. PYRENAICA (Jord.) O. E. Schulz = E. PYRENAICA Jord. Diag., 224, 1864 = E. LUGDUNENSIS Jord., *l.c.* = E. SABULOSA F. Herm. = D. VERNA, var. SABULOSA Thell. in Hegi Illustr., iv., 390, 1919. Jord. and Fourr. Ic., t. iii., f. 12. Petals 3-3.5 mm. long. Pods 5-6 mm. long. Europe.
19—Essex N. Berechurch, *G. C. Brown* in *Rep. B.E.C.*, 826, 1922, as ? *serrata*, in *Hb. Druce*.

[Var. OBCONICA (De Bary) O. E. Schulz = E. OBCONICA De Bary ap. Rosen in Bot. Zeit., xxvii., 601, 1889. Stalks often very short and with the inflorescence pilose. Pods 5.5-6 mm. long. Europe.]

[Var. CHARBONELLII (H. Sudre) O. E. Schulz = E. CHARBONELLII H. Sudre in Bull. Assoc. Pyr., xviii., 4, 1907-8. Base of the leaves spotted with dull purple. Petals often rosy-violet. Pods 6 mm. × 2.5-3 mm. France.]

Var. HIRTELLA (Jord.) O. E. Schulz = E. HIRTELLA Jord. Pug., 101, 1852. Jord. and Fourr. Ic., t. ii., fig. 6. Stalks in lower parts hispid. Both sides of the acute, oblong-lanceolate leaves hairy, with long, bifid hairs. Petals 2.5-3 mm. long. Pods 6 mm. × 2.5 mm. France, Greece, Spain, Algeria.
66—Durham. Unmortared wall near the High Force Hotel [4467], *E. S. Marshall* in *Rep. B.E.C.*, 488, 1918, as " more hairy *virescens* " in *Hb. Druce*.

Var. RURIVAGA (Jord.) O. E. Schulz = E. RURIVAGA Jord. Diag., 225, 1864. Pods 7-8 mm. × 3 mm. long. France, Caucasus.

66—Durham. Widdy Bank Pastures, March 25, 1915, *J. Cryer* in *Rep. B.E.C.*, 314, 1915, as *majuscula*, in *Hb. Druce*. In abundance. Petals veined, exceeding the sepals. Hairs 2-3-fid. Pods rounded at the top, obovate-oblong. Average 34 seeds in each pod.

Var. MAJUSCULA (Jord.) Haussk. in Verh. Bot. Prov. Brand., xiii., 608, 1871. Druce Br. Pl. List, ed. 1, 5, 1908. E. MAJUSCULA Jord. Pugill., 11, 1852. Jord. and Fourr. Ic., t. 5, fig. 20. Schulz Mon., fig. 34 a. Plant robust. Pod 6-7 mm. × 2.5-3 mm. Petals 2.5-4 mm. long. Upper part of leaves coarsely dentate, greyish green. Europe.

19—Essex N. Alphamstone [882], *G. C. Brown* in *Rep. B.E.C.*, 314, 1915, *Hb. Deless.*

20—Herts. Fells' Nurseries, Hitchin [63], *Little* in *Hb. Druce.*

22—Berks. Inkpen, 1890; Shrivenham, 1895, *Druce.*

23—Oxford. Woodstock, 1905; Charlbury, 1882; Cassington [O.8], 1915, *Druce.*

24—Bucks. Bow Brickhill, 1891, *Druce*, teste *Freyn.*

30—Beds. Near Brickhill, *Druce.*

36—Hereford. Brampton Abbots, *A. Ley* in *Rep. B.E.C.*, 437, 1909.

48—Merioneth. Llanderfel, 1860, *W. Pamplin* in *Hb. Druce.*

54—Lincoln N. Leverton, *Mason* in *Hb. Druce.*

62—York N.E. Gormire, May 1858, *J. G. Baker* in *Journ. Bot.*, 237, 1928.

90—Angus. Near Bridge of Dun (52b), *Corstorphine* in *Rep. B.E.C.*, 117, 1914; The Lurgies, Montrose, p.p., *Corstorphine*, *l.c.*, 117, 1914.

Var. AMERICANA (Pers.) O. E. Schulz = DRABA VERNA, var. AMERICANA Pers. Syn., ii., 190, 1807 = E. AMERICANA DC. Syst., ii., 356, 1821 = E. PSILOCARPA Jord. Diag., 241, 1864. Petals 2-2.5 mm. long. Pods obversely linear oblong, 7-10 mm. × 1.5-2 mm. Europe, N. America.

17—Surrey. Cultivated field near Lockner Farm, Chilworth, 1918, *C. E. Salmon* in *Journ. Bot.*, 237, 1928.

Var. KROCKERI (Andrz.) Asch. & Graeb. Fl. Nordost. Flack., 364, 1898, excl. of MAJUSCULA = E. STENOCARPA Jord. Pugill., 11, 1852, et Diag., 239, 1864, p.p. Jord. and Fourr. Ic., t. iv., fig. 15. Schulz Mon., 356, fig. 34b. Leaves lanceolate, more or less entire. Flowers small. Sepals 1 mm. Petals 1.5 mm. long. Pods linear oblong. Europe (no British locality given), N. America.

11—Hants S. Near Townhill Park, Southampton, 1918, *W. R. Sherrin* in *Journ. Bot.*, 238, 1928. Winchester, 1891, *Miss C. E. Palmer* in *Hb. Druce.*

13—Sussex W. Sandy field, Greatham, May 1906, *E. S. Marshall* in *Rep. B.E.C.*, 211, 1906, in *Hb. Druce*; Lavington [2583], 1901, *E. S. Marshall* in *Journ. Bot.*, 238, 1928.

17—Surrey. Milford [1218], *E. S. Marshall* in *Rep. B.E.C.*, 438, 1894, as *stenocarpa*; oatfield, Frimley, *Wolley-Dod* and *Marshall* in *Rep. B.E.C.*, 435, 1894; do. [1215], 1894; Wisley [O.18], 1915; Byfleet, 1929, *Druce*.

20—Herts. Stony loam in corn, St Ippolyts [60], *J. E. Little*, as *stenocarpa*. See *Journ. Bot.*, 238, 1928.

22—Berks. Tubney; Coleman's Moor, *Druce*.

23—Oxford. Stanton St John, *Druce*.

24—Bucks. Bow Brickhill, 1899, *Druce*.

30—Beds. Near Brickhill, 1899, *Druce*.

38—Warwick. Packington, 1809, *Countess of Aylesford*. Lighthorn, 1852, *Miss C. E. Palmer* in *Hb. Druce*.

105—Ross W. Gairloch, *Druce*.

Var. ACROCARPA (Brenner) O. E. Schulz = E. STENOCARPA Jord. Pugill., 11, 1852; Diag., 239, 1864, ex parte = E. ACROCARPA Brenner in Meddel Soc. Faun. et Fl. Fenn., xxix., 5, 1912 = E. AURIGERANA Sudre and Maranne in Bull. Soc. Bot. Fr., lx., 384, 1913. Plant small, 4-9 cm. Leaves minute. Pods 5-6 mm. × 1.5-2 mm. Europe. British Isles not given.

Jersey. Quenvais, *C. E. Salmon* in *Journ. Bot.*, 238, 1928. "Ad *oedocarpa* vergens" O. E. S.

15—Kent E. Woolwich, 1724, *Dillenius*. Walmer and Kingsdown, 1918, *H. E. Fox* in *Hb. Druce*.

17—Surrey. Milford Heath, 1898, *J. Comber*; do., 1912, as *stenocarpa*, in *Hb. Druce*. Newark Abbey; Wisley, *Druce*. Byfleet Church; Chilworth, *C. E. Salmon*.

18—Essex S. Burnham-on-Crouch, *W. R. Sherrin*. See *Journ. Bot.*, 238, 1928.

20—Herts. St Ippolyts [60 and 61], *J. E. Little* in *Rep. B.E.C.*, 118, 1914, as *stenocarpa*. N. of West Minns [696], *J. E. Little* in *Hb. Druce*.

22—Berks. Bagley, 1882, *B. King* in *Hb. Druce*. Frilford; Tubney, 1929, *Druce*.

23—Oxford. Elsfield, 1895; Deddington [O.13], 1915, *Druce*.

26—Suffolk W. Bury St Edmunds, *Miss Todd*; Mildenhall, *R. S. Adamson* in *Rep. B.E.C.*, 213, 1920.

27—Norfolk E. Castle Acre, *Hb. Druce*.

30—Beds. Mauldon, 1914, *J. E. Little* in *Rep. B.E.C.*, 118, 1914, as *stenocarpa*; Sandy, *J. E. Little*; Leighton Buzzard, *Druce*.

56—Notts. Welbeck, 1929, *R. Goulding* in *Hb. Druce*.

57—Derby. Millers Dale, 1906, *Druce*.

59—Lancashire S. Near Liverpool, 1835, *Hb. Druce*.

78—Peebles. Peebles, *McT. Cowan*, 1912, in *Hb. Druce*.

Forma MINUTISSIMA (Griseb.) O. E. S.
20—Herts. Ickleford House, Hitchin [68], *J. E. Little* in *Rep. B.E.C.*, 449, 1913.

B. Section.

SCAPOSAE, *l.c.* Stalk thickened below, rigid, upper part slightly flexuous.

[Var. COCHLEATA (Rosen) O. E. Schulz = E. COCHLEATA Rosen in Ber. Deutsch. Bot. Gesell., xxviii., 244, 1910. Blade of the leaf at first ovate. Petals 4 mm. long. Pods subovoid, subtumid. Germany. Also a hybrid with *radians*.]

[Var. STRICTA (Rosen) O. E. Schulz = E. STRICTA Rosen, *l.c.* Leaves at first rhomboid. Petals 3 mm. long. Pods oblong-ovoid, subcompressed. Schulz Mon., fig. 34 c. Europe, North and East.]

[Var. HARCYNICA F. Hermann in Verhl. Bot. der Prov. Brand., xlv., 195, 1904. Leaves broadly lanceolate or obovate, coarsely dentate. Petals large, 4 mm. long. Pods subellipsoid, about 8 mm. × 3.5-4 mm. Germany.]

Var. SESSILIFLORA (Beck.) O. E. Schulz = E. VULGARIS, var. SESSILIFLORA Beck., *l.c.*, 172, 1892 = E. COCHLEOIDES Lotsy. Schulz Mon., fig. 34 d. Leaves numerous, short, broadly obovate. subsessile. Stalk short. Petals 2.5-3 mm. long. Pods claviform, subtumid.

16—Kent W. Old walls, Bexley Heath, 1867, *H. E. Fox* in *Hb. Druce*.
17—Surrey. Milford [1216. 1217], *E. S. Marshall* in *Rep. B.E.C.*, 435, 1894, as "perhaps *virescens*," in *Hb. Druce*.
83—Edinburgh. Midcalder, 1858, *Bell* in *Hb. Druce*.

[Var. PATENS (Rosen) O. E. Schulz = E. PATENS Rosen, *l.c.* Leaves larger than in *sessiliflora*, obovate-lanceolate. Fruiting pedicels horizontally patent. Breslau, Germany.]

EROPHILA MACROCARPA.

[E. MACROCARPA (Boiss. & Heldr.) Boiss. Fl. Orient., 304, 1867 = D. MACROCARPA Boiss. & Heldr. Diag., 28, 1849 = D. VERNA, var. MACROCARPA Halac. Consp. Fl. Graec., i., 102, 1901. Recedes towards *verna* in its narrower pods. Stems solitary or few, always erect, in the lower part with appressed, furcate hairs. The leaves with furcate or stellate hairs. Raceme with 4-12 flowers. Sepals 1.5 mm. long, thinly pilose. Petals 2.5-3 mm. long. Pods with stalks 1.5-0.4 cm. long, narrow linear, (5)7-12 × 1.2(3) mm. Ovary with 14-60 ovules. Schulz Mon., fig. 35 a, b. Mediterranean area, Asia Minor.]

EROPHILA BOERHAAVII.

E. BOERHAAVII (Van Hall) Dumortier Fl. Belg., 120, 1827. The specific name is given from *Alysson vulgare polygoni folio loculo rotundo*. E. BOERHAAVII Index Alter Pl. Hort. Lugd. Batav., ii., 4, n. 10, 1720 = DRABA VERNA L., β BOERHAAVII Van Hall Specim. Bot., 149, 1821. Schulz Mon., fig. 35 c, d.

Planta fructifera, usque 10 cm. alta. *Scapi* inferne pilis brevissimis tenuissimisque simplicibus et furcatis usque ad 0.25 mm. longis vestiti, superne glabrescentes. *Folia* brevia, obovato-spathulata, acutiuscula integra vel utrinque 1-3 dentata. in petiolum angustata, pilis furcatis brevissimis tenuissimisque densiuscule obtecta, margine basin versus pilis simplicibus paucis paulo longioribus ciliata, cum petiolo 4-10 mm. longa, superne 1.5-4.5 mm. lata, membranacea saepe rubescentia. *Racemus* sub anthesi laxiusculus dein laxus, 5-10 florus. Pedicelli 5-1 mm. longi. *Sepala* 1 mm. longa, glabra vel hispida. *Petala* 2 mm. longa. *Ovarium* ovulis 32-18. Siliculae in pedicellis 18-3 mm. longis, obovoidea-subrotundae, 4-5 mm. longae, 2.5-3 mm. latae, apice rotundato, stylo brevissimo apiculatae, basin versus parum angustatae, stramineae vel pallide rubescentes. *Semina* 0.4 mm. longa.

Mature plant up to 10 cm. in height. Stems clothed in the lower part with very fine, short, simple or forked hairs up to 0.25 mm. long, upper part glabrescent. Leaves short, narrowed into the petiole, obovate-spathulate, acutish, entire or each side bearing 1-3 teeth, with very short, rather dense, fine forked hairs, the leaf margin ciliate towards the base with a few somewhat longer simple hairs. The leaf, including petiole, 4-10 mm. long, 1.5-4.5 mm. broad at the top, membranous and often reddish. Raceme lax at flowering, becoming laxer, with 5-10 flowers. Pedicels 5-1 mm. long. Sepals, 1 mm. long, glabrous or hispid. Petals 2 mm. long. Ovaries with 32-18 ovules. Pods pedicellate, 18-3 mm. long, obovoid-subrotund, 4-5 mm. long, 2.5-3 mm. broad, rounded at the top, with short apiculate style, slightly narrowed at base, straw coloured or pale reddish.

Europe, Asia, N. America.

3—Devon S. Otterton, 1866, *H. E. Fox* in *Hb. Druce*.

6—Somerset N. Stow Easton, 1909, *Miss I. M. Roper* and *J. W. White* in *Hb. Druce*.

12—Hants N. Old Basing Castle, *Miss C. E. Palmer*; Alton, 1885, *Canon Vaughan* in *Hb. Druce*.

15—Kent E. Canterbury, *Bishop Mitchinson*. Deal to Sandwich, 1889; Kingsdown and Walmer, with sub-var. *uniflora* (Opiz) O. E. S., *Fox* in *Hb. Druce*.

17—Surrey. Reigate Heath, 1899, *C. E. Salmon* in *Journ. Bot.*, 239, 1928.

20—Herts. Near Hitchin [50], *J. E. Little* in *Rep. B.E.C.*, 450, 1913. N. of West Mill [69], *J. E. Little* in *Hb. Druce.*

22—Berks. Cumnor, 1895 (as *brachycarpa*); Cothill [O.4]; Marcham [O.5], 1913 and 1929, *Druce*; S. Hinksey, 1929, *Druce.*

23—Oxford. Hook Norton to Wigginton [4], on wall and under trees, April 14, 1914, *H. J. Riddelsdell* in *Rep. B.E.C.*, 116, 1914, as *verna*; Iffley, March 15, 1880, *B. King* and *Druce*, named *brachycarpa* by H. C. Watson. Wall on Broughton Road, Banbury, 1872, *Miss Pusher.* Near Stow Wood [C.11]; Stadhampton [O.10]; Cassington [O.7, O.17]; Bloxham [O.15]; Stanton St John [C.10, C.12]; Elsfield [O.22]; Wigginton [O.14]; Holton [O.21, O.7 p.p.], 1913 and 1929; Stonesfield, 1888 and 1929, *Druce.*

24—Bucks. Cheddington, *Druce.*

30—Beds. Lower Stondon [51], *J. E. Little* in *Hb. Druce.*

32—Northants. Barnack, 1906, *Druce.*

33—Gloster E. Cirencester, *W. J. Greenwood* in *Hb. Druce.*

50—Denbigh. Pensarn, *Druce.*

58—Cheshire. Bidston, 1876, *J. W. Burton* in *Hb. Druce.*

60—Lancashire W. Frequent, Lytham, April 1905, *C. Bailey* in *Hb. Druce.* "Ad *brachycarpa* vergens," O. E. S.

62—York N. Scawton, 1858, *J. G. Baker* in *Hb. Druce.*

66—Durham. Sugar Hill, 1805, in *Journ. Bot.*, 239, 1928.

69b—Lancs N. Barrow-in-Furness, April 12, 1913, *D. Lumb* in *Hb. Druce.*

84—Linlithgow. Queensferry, *Balfour* in *Hb. Deless., O. E. S.*

111—Orkney. Kirkwall, 1817-8, *Gillies, O. E. S.*

Sub-var. UNIFLORA (Opiz) O. E. S.

15—Kent E. Kingsdown, 1918, *H. E. Fox.* Walmer, *Druce.*

27—Norfolk W. Ovington [98], *Robinson* in *Hb. Deless., O. E. S.*

35—Monmouth. Portskewet [2828], 1904, *E. S. Marshall* in *Rep. B.E.C.*, 10, 1904, in *Hb. Druce.* Tintern Abbey, *Druce.*

69b—Lancs N. Sandhills, Askham, *D. Lumb* in *Rep. B.E.C.*, 119, 1914, as *praecox* ? in *Hb. Druce.*

Var. VINDOBONENSIS O. E. Schulz. Leaves sparingly pilose, green. Stalk often glabrous. Austria, France, Kashmir.

18—Essex S. Billericay, 1908, *Druce.*

90—Angus. Wall at Clocksbriggs [55], 1914, *Corstorphine* in *Rep. B.E.C.*, 118, 1914, as ? *obovata.*

[Var. LINEARIFOLIA O. E. Schulz. Leaves oblanceolate or sublinear, 1-1.5 cm. long, the top about 1.5-3 mm. broad. France, Asia Minor, Chile.]

Var. CRASSICARPA (Wirtg.) O. E. Schulz = DRABA VERNA, var. CRASSICARPA Wirtg. Herb. Pl. Sel. Fl. Rhen., fasc. viii., n. 322. Leaves numerous, 2 cm. long, narrow, oblanceolate, serrate, subpinnatifid towards the apex, with a few acute teeth. Pod 4.45 mm. × 2.5 mm.

17—Surrey. Milford [1220 and 1224], *E. S. Marshall* in *Rep. B.E.C.*, 434, 1894, as "near *hirtella.*" Headley, *Salmon* in *Journ. Bot.*, 239, 1928.

34—Gloster W. Woolaston, 1896, *Shoolbred*; Tidenham Chase, *Shoolbred* in *Rep. B.E.C.*, 510, 1896. as *praecox*; also from Tuttshill, 1897, all in *Hb. Druce.*

Var. INFLATA (H. C. Watson) O. E. Schulz. Differs in its manifestly inflated, oval or elliptic pod, 3-3.5 mm. × 1.5 mm. Leaves linear-lanceolate.

6—Somerset N. Burnham, 1929, *W. D. Miller* in *Hb. Druce.*

14—Sussex. Hastings, 1904, *Druce.*

17—Surrey. Milford [1217], *E. S. Marshall* in *Rep. B.E.C.*, 434, 1894, as *virescens.*

23—Oxford. Sparsey Bridge, March 1882, *Druce* in *Rep. B.E.C.*, 65, 1882, as *D. verna* var., with the note that the fruit section is almost as round as *inflata.* Babington says of it—"very like the plate of *inflata.*" Boswell [Syme] says "is *praecox*;" G. Nicholson says "fide Baker, an unnamed form, approximating *inflata.*"

32—Northants. Brackley, 1888, *Druce.*

88—Perth M. Ben Lawers, 1837, *Walker Arnott.* Very near summit, Ben Lawers, *Druce.* Craig Cailleach, *D. Paul* in *Trans. Bot. Soc. Edin.*, 49, 1901. Rocks near Lochan na Chat, 2500 feet, 1913, *C. E. Salmon* in *Journ Bot.*, 239, 1928.

Var. DECIPIENS (Jord.) O. E. Schulz = E. DECIPIENS Jord. Diag., 220, 1864. including E. BREVISCAPA Jord., *l.c.*, 222, E. SUBINTEGRA Jord., *l.c.*, 223, E. LUCIDA Jord., *l.c.*, 226, et Jord. and Fourr. Ic. Fl. Eur., 1, 1866, t. ii., fig. 8 = E. CURTIPES Jord., *l.c.*, 242, = E. OCCIDENTALIS Jord., *l.c.*, 243. Jord. and Fourr., *l.c.*, t. v., fig. 19. Petals 2-2.5 mm. long, lower fruiting pedicels 2.5 mm. long. Pods ellipsoid-pear shaped, obtuse, 4.5-5.5 mm. × 2.25 mm. Europe, W. Asia, Turkestan, Phrygia, Africa, Morocco.

Jersey. Quenvais, 1921, *Druce.*

Guernsey. L'Ancresse, 1919, *Druce.*

3—Devon S. Otterton, 1866, *H. E. Fox* in *Hb. Druce.*

8—Wilts S. Walls of Bishop's Palace Yard, 1883, *Miss C. E. Palmer* in *Hb. Druce.*

10—Isle of Wight. Freshwater, 1889, *Miss C. E. Palmer* in *Hb. Druce*, as *brachycarpa.*

13—Sussex W. Selham [2677], 1902, *E. S. Marshall* in *Journ. Bot.*, 240, 1928.

15—Kent E. Woolwich, 1724, *Dillenius*; Kingsdown, 1918, *H. E. Fox*; Walmer, Deal, 1896; Dungeness, *Druce.* Hythe Rifle Range [Y.136], *Lousley* in *Rep. B.E.C.*, 563, 1927, as *stenocarpa.*

17—Surrey. Milford [2284], *E. S. Marshall* in *Rep. B.E.C.*, 597, 1899. E. F. Linton asks "why not *verna*?" Witley [1225], 1894, *E. S. Marshall*; Reigate, *C. E. Salmon* in *Journ. Bot.*, 240, 1928.

19—Essex N. Alphamstone [884], *G. C. Brown* in *Rep. B.E.C.*, 315, 1915.

20—Herts. Fells' Nurseries, Hitchin, 1912, *Little*; Grove Mill, Hitchin, *Little* in *Rep. B.E.C.*, 808, 1919; between Beiston and Wymondley, 1912, *Little*; Cardwell, 1913, *Little*; Hitchin, 1898, *Druce.*

21—Middlesex. Acton, *A. Loydell* in *Hb. Druce.*

22—Berks. Sheepstead, 1914; Ridgeway, 1895; cornfield, Moulsford, 1915, *Druce*; Cothill, *Druce*, "ad *uniflora* vergens." Frilford, 1929, *Druce.*

23—Oxford. Marston [C.13] (and as *uniflora*); Stadhampton Park Wall [O.20]; Stanton St John, 1915; Finstock, and f. *luxurians*, 1909, as *Ozanoni*; Tusmore, f. *macrocarpa*, *Druce.* Wigginton garden path, *Riddelsdell* in *Rep. B.E.C.*, 487, 1918, as *majuscula.* North Leigh, on site of Roman Villa [P.77], 1929, *Druce.* Banbury, *Beesley.*

24—Bucks. Ivinghoe, 1923, *Druce.*

25—Suffolk E. Aldeburgh, 1911, *Druce.*

31—Hants. About Ramsay and Wood Walton [3663], *E. S. Marshall* in *Journ. Bot.*, 240, 1928.

32—Northants. Colley Weston, 1877, *Druce.* Kingsthorpe, 1892; *Dixon.*

33—Gloster E. Fairford, *Druce* in *Rep. B.E.C.*, 116, 1914.

34—Gloster W. Turfy wall top, Tidenham Chase, as *praecox*; Tuttshill, 1897, *Shoolbred* in *Hb. Druce.*

35—Monmouth. Tintern Abbey, *H. E. Fox* in *Hb. Druce.*

41—Glamorgan. Kenfig, 1926, *Druce.*

Sub-var. LINEARIFOLIA O. E. S. Leaves very narrow, 2-3 mm., more narrowed at base.

17—Surrey. Reigate Heath, 1897, *C. E. Salmon* in *Journ. Bot.*, 240, 1928.

21—Middlesex. On old wall, Neasden, April 5, 1867, *H. E. Fox* in *Hb. Druce.*

23—Oxford. Hethe [41212], 1916, *Druce*; Hook Norton to Wigginton [n.5], *H. J. Riddelsdell* in *Rep. B.E.C.*, 117, 1914, as *verna.*

90—Angus. Field track near Rescobie [54], 1914, *Corstorphine* in *Rep. B.E.C.*, 117, 1914, in *Hb. Druce.*

92—Aberdeen S. Braemar, 1854, *Hb. Druce.*

Var. BRACHYCARPA (Jord.) O. E. Schulz = E. BRACHYCARPA Jord. Pugill., 9, 1852, et Diag., 219, 1864. Petals very small, 1.5 mm. long. Pods 3 mm. × 2 mm. (No British or extra European localities given by Schulz.)

Jersey. Quenvais; St Aubin's, 1907; St Ouen's, 1910, *Druce.*

5—Somerset S. Minehead Warren, c. 1850, *J. G. Gifford*, also [2919] *E. S. Marshall.*

6—Somerset N. Bleadon [2918], 1905, *E. S. Marshall* in *Journ. Bot.*, 240, 1928.

8—Wilts S. Salisbury Palace Walls, 1883, *Miss C. E. Palmer* as f. *uniflora* in *Hb. Druce.*

13—Sussex W. Duncton Down, 1901; wall-top, Chichester, 1902; Downs, Houghton, 1902, *E. S. Marshall* in *Journ. Bot.*, 240, 1928.

15—Kent E. Kingsdown to Deal, 1919, *H. E. Fox* in *Hb. Druce.*

17—Surrey. Milford [1224], 1894, *E. S. Marshall* as *virescens* in *Journ. Bot.*, 240, 1928. Reigate Heath, 1899, *C. E. Salmon.*

22—Berks. Frilford; Marcham, *Druce.*

23—Oxford. Forma *uniflora*, Wigginton, *Riddelsdell* in *Rep. B.E.C.*, 118, 1914, as *praecox.* Sparsey Bridge, 1882; Iffley, 1880; Stadhampton [O.10], 1915; Yarnton [O.6]; Stanton St John [C.10], *Druce* in *Rep. B.E.C.*, 315, 1915; Elsfield, 1915; Marston [O.21]; Charlbury, 1881, *Druce.*

24—Bucks. Wolverton, 1876, *Druce.*

32—Northants. Barnack, 1906, *Druce.*

35—Monmouth. Tintern, March 1916, *Hb. Druce.*

33—Gloster E. Fairford, *Druce.*

53—Lincoln S. Stamford, *Druce.*

57—Derby. Miller's Dale, 1906, *Druce.*

60—Lancs S.W. Frequent on the Green, Lytham, 1905, *C. Bailey* in *Hb. Druce.*

62—York N. Scowton, May 1856, *J. G. Baker*, p.p.

88—Perth M. Ben Lawers, *Druce.*

109—Caithness. Dunnet Links, 1900, *E. S. Marshall* in *Hb. Druce.*

Sub-var. LINEARIFOLIA O. E. Schulz.

19—Essex N. On wall at Twinstead, March 1918, *Druce.*

Var. MURICOLA (Jord.) O. E. Schulz = E. MURICOLA Jord. Diag. 224, 1864 = E. BREVIFOLIA Jord., *l.c.*, 243 = E. OVALIS Brenner. Petals 2.5-3 mm. long. Pods 6-7 mm. × 3-3.2 mm. No British locality given by Schulz. Asia Minor, Himalayas up to 2650 metres, N. America.

Guernsey. Petit Bot, 1910, *Druce.*

22—Berks. Marcham, 1915 [O.1, O.2], "Petals twice as long as sepals, divergent. Hairs bifid or trifid," *Druce.*

23—Oxford. Marston [C.13], May 1915, *Druce* in *Rep. B.E.C.*, 315, 1915.

39—Stafford. Alstonfield, *W. H. Purchas* in *Hb. Druce.*

65—York N.W. Below Ingleborough, May 1926, *Miss I. M. Roper* in *Rep. B.E.C.*, 251, 1926, as *stenocarpa.*

Var. DRUCEI O. E. Schulz, nov. var. Scapi fructiferi, 3-5 cm. alt. Folia anguste spathulata, cum petiolo 5-15 mm. longa, integra. Sepala 1.5 mm. longa. Petala pro rata magna, 3-4 mm. longa.

22—Berks. Walls near Sheepstead House [O.3], 1915. Noted as petals 6 mm., twice as long as sepals; pod large, *Druce.*

23—Oxford. Banbury; Holton Stone Pits [0.5, 6, 7, 8, 9]; Marston [0.21], *Druce*.

Var. MACROPHYLLA O. E. Schulz, nov. var. Folia insigniter magna lataque, cum petiolo 1-1.25 cm. longa, obovata, utrinque 1-2 denticulata, supra medium 4-10 mm. lata, subito in petiolum contracta.

5—Somerset N. Cheddar, 1927, *Druce*.

23—Oxford. Rare. Holton Stone Pits; Binsey, 1914, *Druce*.

Var. OXONIENSIS O. E. Schulz, nov. var. Folia elongata, cum petiolo 1.5-2.8 cm. longa, anguste spathulata, utrinque 1 denticulata, supra medium 4-6 mm. lata, sensim in petiolum angustata.

23—Oxford. Rare. Binsey, 1894, as *spathulifolia*; Marston, 1880 and 1894, *Druce*. A very distinct looking plant on account of its numerous narrowly spathulate leaves in a dense rosette, with arcuate fruiting pedicels.

EROPHILA PRAECOX.

E. PRAECOX (Stevens) DC. Syst., ii., 257, 1821 = DRABA PRAECOX Stevens in Mem. Soc. Mosc., iii., 269, 1812. Includes E. GLABRESCENS Jord. Pug., 10, 1852; E. VIVARIENSIS Jord. Diag., 210, 1864; E. MEDIOXIMA Jord. Pug., 10, 1852; E. MICRANTHA Jord., *l.c.*, 213; E. OBLONGATA Jord., *l.c.*, 214; E. RUBELLA Jord., *l.c.*, et Jord. and Fourr., *l.c.*, i., t. i., f. 4, 1866. Schulz Mon., fig. 35, e., f.

Europe, Asia (Kotschy's Cyprian plant from the Troodos). Schulz gives no British localities.

Planta sub anthesi 1.5-5 cm. alta. *Scapi* saepe solitarii, rarius complures, inferne pilis patentibus simplicibus c. 0.4 mm. longis, interdum brevioribus stipitato-bifurcatis intermixtis disperse vestiti, superne ± glabrescentes. *Folia* brevia, obovato-spathulata, acutiuscula, integra vel utrinque 1-3 dentata, in petiolum angustata, praecipue supra et margine pilis crassis simplicibus longiusculis, 0.5 mm. longis, interdum pilis plerumque paucis bifurcatis intermixtis ± dense obsita, saepe rubro-violacea, cum petiolo 4-10 mm. longa. *Racemus* initio laxiusculus dein laxus, 5-10 florus. Pedicelli 5-1 mm. longi. *Sepala* 1-1.5 mm. longa, glabra vel dorso hirsuta. *Petala* 2-2.5 mm. longa. *Stamina* 1-1.3 mm., antherae 0.2 mm. longae. *Ovarium* ovulis 24-40. *Siliculae* in pedicellis 12-2 mm. longi, breviter obovoideae, compressae, 4-6 mm. longae, 2-3 mm. latae, apice rotundato stylo brevissimo apiculatae, basin versus parum angustatae, straminea vel pallide rubescentes. *Semina* 0.5 : 0.3 : 0.2 mm., humida manifeste tuberculata.

Ireland. Co. Clare, Ballyvaghan.

27—Norfolk E. Old ruined walls, Castle Acre, 1908, *Druce*.

49—Carnarvon. Wall top and edge of footpath, Marine Drive, the Great Orme, *C. Waterfall* in *Rep. B.E.C.*, 118, 1914, as *majuscula*.

[Forma MINUTISSIMA (Willd.) O. E. S. Europe, Asia.]

[Var. CHLOROTICA (Jord.) O. E. Schulz = E. CHLOROTICA Jord. Diag., 216, 1864. The lower part of petal palish yellow. France, Rhine.]

[Var. ROSEOLA (Sudre) O. E. Schulz = E. ROSEOLA Sudre in Le Monde des Pl., xiv., 17, 1912. Maranne in Bull. Soc. Bot. de Fr., lx., 381, 1913. Petals rose coloured. France.]

[Var. SPATHULIFOLIA (Jord.) Druce Br. Pl. List., ed. 1, 5, 1908 = E. SPATHULIFOLIA Jord., 208, 1864. Jord. and Fourr. Ic., t. ii., fig. 5. Plant large, up to 15 cm. Leaves 1-2.5 cm. long, at the upper part 9 mm. broad; 12-15 flowered. Petals 3.5 mm. long. France and Greece.]

Var. MORICANDII O. E. Schulz. Leaves narrow, linear or narrowly oblanceolate, about 1.5 cm. long, by 1.8-3.5 mm. broad. Swiss localities alone cited by Schulz. Named after M. E. Moricand from specimen in Delessert's Herbarium.

32—Northants. On the ironstone walls, Duston, May 1909, *F. S. Willcox*, as *inflata* Hook. f. Named by E. S. Marshall, but see *Wats. B.E.C.*, 220, 1909 (1910).

69b—Lancs N. Seashore at Bardsea, April 1918, *W. H. Pearsall* in *Rep. B.E.C.*, 488, 1918, as *furcipila*.

Var. VIRESCENS (Jord.) O. E. Schulz = E. VIRESCENS Jord. Diag., 207, 1864. Leaves glabrous or with a few simple hairs. Petals 2-2.5 mm. long. Pods often ellipsoid, 3.5 mm. × 2.5 mm. Europe, W. Asia.

Jersey. St Aubin's; Quenvais, 1907, *Druce*.

Guernsey. L'Ancresse, 1907, *Druce*.

3—Devon S. Wall, Knackers Knowle, 1866, *T. A. Briggs* in *Hb. Druce*.

7—Wilts N. On stony platform, Minety Station [2701]; Winsley [2700], 1903, *E. S. Marshall*, "near *majuscula*," in *Hb. Druce*.

14—Sussex E. Beachy Head, 1867, *H. E. Fox*. Down above Lewes, 1898, *T. Hilton* in *Hb. Druce*.

20—Herts. St Ippolyts [55a], 1915, etc., *J. E. Little*. See *Journ. Bot.*, 241, 1928.

22—Berks. Marcham, *Druce*.

23—Oxford. Stanton St John [C.6], 1915; Islip [41214], *Druce* in *Rep. B.E.C.*, 557, 1916; Burford, 1906; Cassington [O.7], *Druce*.

57—Derby. Froggatt, 1903, *W. R. Linton* in *Rep. B.E.C.*, 10, 1903, as *brachycarpa*, in *Hb. Druce*.

90—Angus. Sands of Barry [58], *Corstorphine* in *Rep. B.E.C.*, 119, 1914, as *praecox*.

Forma NANA (Sudre) O. E. Schulz. Stalk slender, 1.5-4 cm. Leaves 2.5 mm. long. Raceme 1-6 flowers. Pods 2-3 mm. long.

Jersey. La Haule, 1907, *Druce.*

14—Sussex E. Downs near Telcombe, 1898, *T. Hilton* in *Hb. Druce*; Beachy Head, 1867, *H. E. Fox* in *Hb. Druce.*

20—Herts. Walsworth, etc., *J. E. Little.* See *Journ. Bot.*, 241, 1928.

23—Oxford. Islip, *Druce.*

37—Northants. Gretton, 1907, *G. Chester.*

Var. SUBNITENS (Jord.) O. E. Schulz = E. SUBNITENS Jord. Diag., 208, 1864. Jord. and Fourr., *l.c.*, t. i., fig. 2. Leaves sparsely hairy. Petals 4-5 mm. long. France only, in Schulz.

14—Sussex E. Walls, Southover, March 1927, *Miss M. E. Edgar* in *Journ. Bot.*, 241, 1928.

Var. MICROCARPA O. E. Schulz. Pods small, shortly obovoid, 3-3.5 mm. × 1.5-2.5 mm.

22—Berks. Park Farm Down (ant-hills), alt. 600 feet, 1929, *C. G. Trapnell* in *Hb. Druce.*

[Var. CAMPESTRIS (Jord.) O. E. Schulz = E. CAMPESTRIS Jord. Diag., 210, 1864 = E. AMBIGENS Jord., *l.c.*, 211 = E. PROCERULA Jord., *l.c.*, 215 = E. PROPINQUA Jord., ex Perard Bull. Bot. Soc. Fr., 320, 1871. Petals 3-3.5 mm. long. Pods 6-9 mm. × 2.25-3.5 mm. France.]

[Var. LEPIDA (Jord.) O. E. Schulz = E. LEPIDA Jord. Diag., 217, 1864 = E. PATULA Jord., *l.c.* Plants often very small. Pods 4-5 mm. × 1.75-2 mm. France.]

[Var. EUCHLOA (Sudre) O. E. Schulz. Maranne, *l.c.*, 381, 1913. Plant 4-5 cm. high. Pods 3.5 mm. × 1.75-2 mm. Albi and Tarn, France.]

EROPHILA SETULOSA.

[E. SETULOSA Boiss. & Blanche Diag., 2, ser. v., 31, 1856; Boiss. Fl. Orient., i., 304, 1867. Plant 3-15 cm. high. Stems many, thick, glabrous. Leaves broadly or narrowly spathulate, acute . . . with petiole 1-2 cm. long, large stiff hairs (setulis), simple, rarely bifurcate. Racemes 3-12 flowered. Sepals 1.5 mm., glabrous or hairy. Petals 2.5-3 mm. Pods long stalked, 7-10 mm. × 2-7.5 mm. Schulz Mon., fig. 35, g, h. Syria.]

[Var. DINGLERI O. E. Schulz, with more hairy leaves. Rumelia.]

EROPHILA MINIMA.

[E. MINIMA C. A. Meyer Verz. Pl. Kauk., 184, n. 1624, 1831. Boiss. Fl. Orient., i., 303, 1867. Plant after flowering 0.5-5 cm., in fruit 1-10 cm. Stems few or many. Leaves elongate, entire, narrow linear, fleshy, drying yellow. Flowers small. Sepals 1 mm. Medit., W. Asia.]

[Var. TURKESTANICA O. E. Schulz. Leaves shorter, 4-5 mm. × 0.5-1 mm. Pods 15 mm. × 2 mm. Turkestan, Syria.]

EROPHILA GILGIANA.

[E. GILGIANA (Muschler) O. E. Schulz = DRABA GILGIANA Muschler. Differs from *minima* by its more numerous, ascending, filiform stems, shorter leaves, sepals 0.75 mm. glabrous. Pods 15 mm. × 5 mm. Syria.]

EROPHILA MUSCOSA.

[E. MUSCOSA DC. Syst., ii., 358, 1821 = DRABA MUSCOSA Ruiz & Pavon ex Steudel Nom., ii., 528, 1840. Among moss. Peru, *Ruiz* and *Pavon* in *Hb. Lambert*. Plant small, resembling moss in its appearance. Stem 1-2 flowered. Pods elliptic.]

HYBRIDS.

[E. BOERHAAVII × PRAECOX = E. VINCENTII O. E. Schulz. France.]

[E. PRAECOX × VERNA (E. GLABRESCENS—MAJUSCULA Favrat) = E. CHAVINII (L.) Favrat. Switzerland, France, Germany.]

E. BOERHAAVII × VERNA = E. FAUCONETTII O. E. Schulz. Pods abortive, small. Seeds none. Switzerland, France, Hungary.
22—Berks. Frilford, 1920, *Druce*.
49—Carnarvon. Pen-y-Dinas, *Druce*.

THE STABILITY OF FORMS IN OUR FLORAS.

E. ALMQUIST.

Studies of spontaneous plants in their native habitats together with cultures of them amply demonstrate the status praesens in the vegetable kingdom. Past and future researches must of necessity take account of the present status. If speculations on evolution are contrary to our experience, they must be rejected. Our experience shows a remarkable stability of the forms of both the higher and lower plants. Constancy nowadays rules almost everywhere. New-bred forms now and then appear but usually disappear quickly. Very seldom are they fit for spreading. On the contrary, some imported plants spread immediately after crossing. But the same forms seem to prevail in our floras now as in the days of Linné, almost 200 years ago, and in culture they reveal the same characters as in the Linnean garden. All indicate a stability that, of course, has an enormous importance for man and science. It is absurd to speculate on evolution without knowing the status praesens.

It is certain that constancy prevails, but nevertheless we are able to observe some slight changes in the forms. I intend to illustrate these changes by my studies of Bacteria and of *Capsella Bursa-pastoris.* I have cultivated 200 forms of *Capsella*, mostly from Europe, but some also from Siberia and America. In repeated cultures almost all forms revealed constancy. They followed the rule of Alexis Jordan that small species, although growing together, do not cross spontaneously. In France and other Southern countries one meets hybrids of *C. rubella* and its kindred. In my cultures the named forms often crossed, also Swedish forms and fertile or sterile hybrids appeared. I have been able to follow for a long time 12 groups of fertile hybrids. Most of them originated from my own cultures, but some I received from France or other Western countries. In the neighbourhood of Stockholm, at Rosendal, some remarkable Capsellas have persisted for at least 20 years. Some of them are hybrids, and two seem to be constant. I named these *C. latisiliqua* and *C. cuspidata.* All without doubt had their origin in Southern countries.

In France we find different constant forms which seem to originate from *C. rubella* by crosses. *C. turoniensis* has concave or oblique capsules, *C. mediterranea* convex capsules, with deep notch. My new-bred hybrids show quite similar forms, and therefore I suppose that many existing constant forms were once bred as crosses with *C. rubella* and its kindred. I like to enlarge the theory and suppose that most of the present innumerable Capsellas are bred in that way. As the ice melted many plants akin to *C. rubella* followed to Northern countries. A great many bred hybrids, most of them evanescent, but some were fit for the environment and survived. Especially in parts of Germany and round the Baltic Sea we find an infinite number of forms that have almost reached constancy. Many are not able to spread and live only in small territories. The breeding by mutation continues in our day, commonly caused by "nutrimentum luxurians." On composts of algae on the shores, on dirty streets, etc., they lose the petals and the developed forms of the leaf, the stems become weak, all signifying the "lose" mutation. In Alsace, on a market place, a few specimens of *C. Heegeri* grew for some years. The capsules were round, the stem high, very firm and foliose. Cultures produced, among hundreds similar, one individual with triangular capsules. The late forms are not always identical. Some are conformable to *C. lata*, which also belongs to the neighbourhood of the Rhine. Some show characters reminding one of *C. rubella*, especially in the small seeds and in the lobes of the leaves. We do not know if crossing or mutation bred the new form, but *C. lata* and *C. rubella*, to be sure, are the near kindred.

R. Koch proved the constancy of many Bacteria. Nowadays we are able to make cultures from only one individual and follow the strain in different environments. Bacteria are as constant as the higher plants. They produce spores, and in the pathogenic bacteria often after leaving the host. The "lose" mutation is well known. Some observers, *i.e.*, Dodeswell, talk of a copulation. I have seen haplont kernels develop to diplonts. Thus sexuality is not to be excluded. My observations on Capsellas and Bacteria are to be found in "Zur Artbildung in der freien Natur" (Acta Horti Berg., ix., Nr. 2, 1926).

Many authors neglect facts and experience in a striking manner. They exclude inconvenient facts which differ from their systems and pia desideria, and make up hypothetical interpretations. Some authors do not know plants in their natural state and form conclusions from their experience of cultivated plants, where man's will rules. Man preserves and upholds innumerable forms unfit for occurrence. On the contrary in nature constancy rules and every form finds its suitable habitat. The theory that neglects facts must on that account be condemned.

NOTES ON MENTHA.

J. Fraser.

×*Mentha niliaca* Jacq., var. *Druceana* Fraser. Var. nov. (*M. longifolia* × *rotundifolia*). Stem stout, erect, freely branched, with slender, sharply ascending branches, moderately densely villous, with deflexed or retrorse hairs, but loosely so in some places, 2-3 feet high; internodes 3.5-6 cm. long. Leaves narrowly ovate or ovate-lanceolate, gradually narrowed from near the base to a long, acuminate, very acute point, sessile, cordate or subcordate at the base, sharply serrate, thinly hairy with very short hairs above and dark green, undersurface grey tomentose with short hairs, but pilose on the principal nerves with hairs of medium length, ± netted with sunk veins on both faces; superficies 3.5-7.5 × 1.5-2.5 cm.; serratures very numerous, directed forward, irregular in size and spacing, in some specimens rather deep (0.25-3 mm.), acute; leaves of the branches lanceolate, otherwise like those on the stem. Spikes cylindrical, very dense, 3.5-6 cm. long, the lateral ones close under the main spike, nearly horizontally patent. Bracts setose, plumose, slightly longer than the open corolla. Pedicels villous with 3-5 jointed, loosely reflexing hairs. Calyx villous; teeth lanceolate, very slender, ciliate with 2-6 jointed hairs, 4-5 joints being the most common. Corolla pale lilac-purple. Stamens included, rarely exserted.

The above description was first drawn up from a specimen gathered near Abingdon, Berks, in 1926, by G. C. Druce, and distributed under the name of ×*M. niliaca* Jacq. The specimen reached me after I had finished the descriptions of Menthae Britannicae for the Supplement of the B.E.C. Report for 1926, and though I had Jacquin's description it was inadequate to distinguish the above from the type, and time failed me just then to consult his plate. The description is slightly altered to include a specimen from Yarnton, Oxon, collected in 1927 by G. C. Druce, with a longer main spike; and another from Tenby, Pembroke, collected by Miss E. S. Todd in 1929, with deeper serratures to the leaves. The long, gradually acuminate leaves readily distinguish the variety from all others of this group of hybrids.

×*M. niliaca* Jacq., var. *mollissima* Borckh., f. *brevipila*. Forma nov. The leaves are dark green above (not grey), and covered with a very short mealy pubescence, consisting of the bulbous basal joint of the hairs, intermixed with a few, very short, slender hairs; the undersurface is more grey and, while the lower leaves are very thinly hairy, showing some amount of mealy pubescence, the upper and younger ones are tomentose beneath. In all other respects this is the same as the variety *mollissima*.

This variety bears the same relation to var. *mollissima* as the var. *Nicholsoniana* does to var. *nemorosa*, and var. *pulverulenta* (Strail) does to *M. longifolia*. The two last named were originally described as species. I have been unable, so far, to get the locality or name of the collector of the new form. It was sent me by Dr Druce in 1929.

×*M. rubra* Sm., var. *Turreffii*. Var. nov. (*M. spicata* × *verticillata*). Stem stout or slender, according to vigour, flexuous, branching ± under the main inflorescence, purple or green, according to exposure, 2-3 feet high, thinly or rather thickly covered with short deflexed hairs on different plants; internodes 3-5.5 cm. long. Leaves narrowly ovate, obtuse to subacute, rounded at the base or slightly decurrent on the petiole, serrate, thinly sprinkled with short adpressed hairs above, and pilose on the principal veins beneath with longer hairs, sometimes rather densely hairy above or below; superficies 4-5 × 2.2-2.5 mm.; serratures irregular, directed forward, obtuse to subacute, 0.25-1.25 mm. deep; petioles hairy, 5-7 mm. long. Bracts ovate, similar to the leaves, with shorter petioles, very gradually decreasing in size, until they are very small, but always exceeding the open flowers. Pedicels glabrous or thinly furnished with 2-4 jointed hairs. Calyx tube thinly covered with 2-4, rarely 5-jointed hairs, tubular but slightly wider at the teeth; teeth awl-shaped, ciliate with 1-2 rarely 3-celled hairs. Stamens normally included.

The above variety would seem to exclude ×*M. rubra* Sm., but in all respects it resembles ×*M. rubra* Sm., var. *raripila* Briq., with a greater degree of hairiness, but more irregular in having hairs on the pedicels and calyx. In 1929, the Rev. Francis Turreff made a gathering of eighteen specimens within 150 yards of one another on the banks of the classic Mill of Tifty Burn, Fyvie, Aberdeenshire, at a point where the stream is eight feet wide. The previous year he sent some specimens which were very erratic in their leaves. Some of them were densely hairy on the upper face, with rather long hairs, mixed with some mealy pubescence; other leaves on the same stem were densely hairy beneath. In other respects they were like the 1929 specimens.

×*M. verticillata* Linn., var. *ovalifolia* H. Braun, f. *subglabra*. (*M. aquatica* × *arvensis*). The stems and both faces of the leaves of this form are subglabrous, but in all other respects it conforms to an average ×*M. verticillata*, var. *ovalifolia*. The pedicels and calyx are hairy as usual.

I omitted a subglabrous form from previous descriptions in the hope of finding a subglabrous form of the type ×*M. verticillata*, and though I have a sheet from Hurley, near Great Marlow, Berks, 1888, it is not extreme or good. I do not know to what variety John Gilbert Baker attached the var. *subglabra*, but as the varieties were not segregated in British books or lists in his day, he might have been satisfied with any subglabrous form of *M. sativa* Linn. In any case subglabrous forms are most frequent in var. *ovalifolia*, in my experience. My sheet of the f. *subglabra* was collected on the banks of the Thames, below Weybridge, Surrey, in 1898.

NOTES ON ORCHIS PURPURELLA Stephenson.

Dr T. Stephenson.

A few notes are here given on the distribution and forms of *O. purpurella*.

At the original Aberystwyth station, where for some years the plant grew in hundreds, it almost disappeared for some seasons; but has increased in number recently. It has been found near Llandovery, along with some beautiful hybrids with *O. maculata* (aggr.), by Mr W. H. St Quintin.

In the north it grows in great plenty in the Orkneys, and has been carefully catalogued by Col. H. H. Johnston in his contributions to the flora of the Orkneys. Most of the Orkney colonies are dwarf in habit, with a good deal of variation in the method of leaf-spotting. Some plants occur with small, oblong spots, some with rather large, circular spots, and some with spots and rings, as well as the more usual forms with minute spots, or none at all. The plant is found in Canty Bay and the Luffness Marshes, in the Firth of Forth. In Durham, Waldridge Fell is a station.

A fortnight was spent last summer in Upper Teesdale, where the species grows in great abundance. It has been reported as a form of *O. incarnata*. In the form and colour of the lip, it is exactly like the Aberystwyth plants; so that, if it should die out in Aberystwyth, there is no lack of material in Teesdale. It grows in very many stations in Upper Teesdale, and in Lunedale, as well as on the Northumberland side of the fells, on the South Tyne. Everywhere much the same set of forms was to be found, (a) dwarf plants, 4-6 inches high, with minute leaf-spots; (b) taller plants, 6-8 inches high, with unspotted leaves; (c) hybrids with some form of *O. maculata*, usually taller than (b), often with broader leaves, heavily spotted with crimson spots, and flowers of a lighter, brighter purple, often very handsome. These hybrids are not plentiful, but at the same time by no means scarce, and (d) two, possibly three, very beautiful hybrids with *Gymnadenia conopsea*.

As to forms (a) and (b), it may be noted that there is no difference whatever between them in the form, colour of flower, or marking of lip. If (b) be regarded as *O. praetermissa*, var. *pulchella* Druce, and not as an unspotted form of *O. purpurella*, that will not be any real ground for putting down form (a) as a hybrid. It is, quite evidently, a mutant of (b), though which is the form that has varied from the other, it would be hard to say. I still think, as I did years ago, that they are best thought of as " twin-species " differing by two Mendelian factors for " dwarfness " and " spots." On the ground covered in Teesdale, it should be noted, not a trace was seen of *O. praetermissa* (type). Here *O. incarnata* was only seen in one very dwarf colony on Widdy Bank Fell. It may have been a bad year for this species.

A preliminary note may be made on some very interesting colonies of orchids about whose affinities it is very difficult to speak. Mr St Quintin has found, near Rievaulx Abbey, Yorks, a set of marsh orchids of slender habit, with narrow, lightly-spotted leaves, about 6-9 inches high, with lax spikes of small flowers, medium purple in colour, and lightly streaked pattern. The spur is fairly stout, the lip with regular side-lobes, and fairly large, rounded centre-lobe. *O. incarnata* and *O. Fuchsii* are on the spot; but the plants do not appear to be hybrids. They are certainly not typical *O. purpurella.* They might be set down as a slender form of *O. latifolia.* Very much like them, and much more plentiful, is a plant growing at Blackhall Rocks, Durham, where there is also *O. Fuchsii* and a very early-flowering form of *O. praetermissa.* These are under the observation of Prof. Heslop Harrison; and he will no doubt come to some conclusion as to their relations to the other forms. As far as my knowledge goes, they are unlike any forms hitherto recorded.

KASHMIRIAN NOTES.

Major-General A. B. E. Cator, C.B., D.S.O.

The fishing was getting poorer and poorer. At the end of each blank day the shikari had fresh excuses. Bright sun and high water were not conducive to sport, added to which, both of us were beginning to feel a bit bored with the house-boat, so we decided to make plans for a camping expedition into the hills. Summoning the head man, we informed him of our decision and he set out promptly to secure coolies and ponies.

Two days later found us sitting on the banks of the Jhelum, in the early hours of the morning, surrounded by a motley crowd, all wanting to lend a hand. Our camp paraphernalia had been ferried over and piled in an untidy heap on the bank. There were camp chairs and tables, tents and bedding, pots and pans, tins and a hundred and one articles lying about, all to be stowed on the backs of six miserable little skeletons, described by the head man as pack ponies; two others, in little better condition, were for riding. How all the kit was going to be loaded to my mind was a puzzle, but the head pony boy seemed unconcerned and was soon spreading out thick blankets with big pocket-like sides, and into these pockets he pushed and shoved convenient-sized loads. Each pony was led up in turn, and the load heaved on his back, to be made fast by a rope encircling the whole. It is always a mystery to me how anything ever gets done in the East. Here were assembled some twenty men, not to speak of women, children and pie dogs, all talking at once, each giving separate advice; some busying themselves undoing work just finished by others, they in their turn retaliating by cries and lamentations; but, marvellous to behold, the whole outfit seemed comparatively ready at the end of some forty minutes. The previous day I had tried the two riding ponies. Their paces were awful, stilty and rough, and the saddles indescribably bad and uncomfortable with a thick wooden bar set up perpendicularly on the pommel. I had now the task of breaking to Nell the class of animal she had to ride. In spite of the animal which she now mounted refusing to go where its head was pointed, and invariably squealing and stamping at any confrere who attempted to join him, she took it very well. For my own mount, words fail me; it was weak, thin, and miserable, and I found walking infinitely preferable.

Leaving Sopor at 9 a.m., we started on a hot five-mile walk fringing the Wular Lake, and reached the foot hills at eleven. Here we halted, watered the ponies, and adjusted the loads before starting the climb. Nell was particularly anxious to see the flowers on the higher altitudes, and on the advice of our head man, Lassoo, our destination was to be a place called Nagmaree, 10,000 feet up. It was two marches distant and some 5,000 feet above the lake. The foot hills for the first three or four miles were bare and uninteresting. To our right as we climbed was a steep, bare under-cleft, with a mosque perched on its summit inhabited by Mahomedan priests; to our minds they appeared to lead a dull and useless existence, isolated as they were from any human habitation. They guard the shrine of Baba-Shukr-ud-din, a renowned Saint of his time after whom the hill is named.

As we progressed higher the hills became more covered with vegetation, and on reaching a point about a thousand feet from the bottom the path led us into a thick forest of deodars and chestnuts, with occasional walnut and ilex. It was quite a relief to get under their shade, and finding we were some way ahead of the pack ponies and the rest of the followers we called a halt and sat down to have our luncheon. So far, with the exception of one or two isolated flowers, we had come across none of any special interest. Turning back, the Kashmir valley looked lovely, with the fifteen-mile long Wular Lake shimmering in the foreground at the foot of the mountains. From this point the path dipped down into a heavily-wooded valley, and following it for another four miles we came to the village of Rampur-Ragpur, through which we went, to find a nice camping ground with a good spring on the far side. Here there is a Dak bungalow, but we decided to use our tent and not put our faith in the doubtful cleanliness of the rather attractive-looking wooden bungalow.

Barely had we had our tea and settled down before the head man of the village came in and reported a bear to be feeding in the crops half a mile up the hill above our camp. Imagine my chagrin after a stiff climb to find the wrong-sized cartridges had been sent from Lucknow and would not go into my rifle. No amount of language was any good, and I returned disconsolately to camp; from here we sent off a coolie to Srinagar to try and get some others of the right size. A heavy thunder storm came up in the night, but our tent proved equal to the occasion and we kept dry and snug. In the morning we found the tent too sodden and heavy to pack, so we postponed the start an hour to let it dry in the brilliant sunshine.

At nine o'clock we started on a stiff climb, the path zig-zagging up the heavily-timbered slopes from the village. Every step we took brought fresh views to our gaze, the whole getting more lovely as we ascended. On reaching the top we found a wonderful ascending plateau, with a perfect view of the snow-topped Himalayas to the north; to the south stretched the Kashmir Valley. The plateau fell away steeply on both sides; big cedars and ilex trees were dotted in clumps, reminding us very much of English Parks. Here we found the wild peony, in profusion, gone to seed. Under foot the turf was equal to anything I have seen, and was more like that of a first-class golf links than what one would expect to find some 7000 feet up in the wilds of the Himalayas. Under the cedars, meadow cranesbills carpeted the ground, and a very sweet-smelling Spiraea was everywhere in massive clumps, some of it already in seed, its clusters of bright, red berries contrasting wonderfully with those in full creamy bloom.

Further on in the march we made a very steep and rocky descent of some 500 feet, all the way down through a dark wood of cedars and very old yew trees. It took us all our time to keep our legs, and it was nothing short of a marvel to watch our minute, heavily-laden pack ponies stepping down from rock to rock, every now and again putting their hind feet close together to slide down a steep, slippery place and collecting themselves to spring lightly on to sound ground. At the bottom of the descent we halted and had luncheon, and we were both glad to have a rest in the cool shade. After lunch we had a steady climb of five miles, the slope getting steeper and steeper as we went on. As we got higher we came on plenty of fresh flowers. Amongst the many we noticed were the charming little scarlet Nepalese *Potentilla*, many kinds of *Impatiens*, different Stone-crops, St John's Wort, Mullein, Enchanter's Nightshade, Fumitory, Forget-Me-Not, and a host of common English flowers such as Yarrow, Red and White Clover, Bird's-foot Trefoil. Eyebright and Wild Thyme. On reaching the crest of the slope we came out on to a big open sort of downland, short turf on a long, undulating, ever-rising slope. Still ascending, we eventually came to our camp at Nagmoree, a delightful spot tucked under a steep hill heavily timbered with cedar. On a small plateau was a wooden Dak bungalow, with adjacent cook-house and sheds. Below it a very strong spring came bubbling out of the hillside. In the evening there was a most wonderful sunset, making, if possible, the scenery even more beautiful.

We were now 8500 feet up and were glad enough to put on our heavy tweeds as night drew near. Both of us were pretty tired, so we soon retired to bed in our tent. I was awakened early in the morning by Nell rescuing her odds and ends from the entrance of the tent. heavy rain having considerably soaked them. The rain got worse and worse and the cold was making itself uncomfortably felt, so at 8 a.m. we sought refuge in the bungalow for breakfast. Here we soon had a big log fire blazing, over which we sat for most of the morning, regardless of the deluge which continued to come down until one o'clock. After luncheon the clouds disappeared and bright sunshine again flooded the hill, so we decided to explore higher up for flowers.

The fates directed our footsteps wisely, for after climbing for an hour we came to a great rocky crag beneath which we could see the ground ablaze with colour. Here we spent two entrancing hours, climbing about and ever finding fresh specimens as we got higher. Amongst those we came across were *Cynoglossum microglochin* (a hound's-tongue with a very lovely deep blue flower), *Impatiens micranthemum*, *Morina longifolia* (a beautiful Dipsacaceous plant). *Geranium Wallichianum* (a large Crane's-bill), *Potentilla nepalensis*, *Spiraea sorbifolia*, *Hypericum elodeoides*, *Sedum trifidum*, *Impatiens Balsamina*, *Epilobium Royleanum*, *Anchusa*, *Aster molliusculus*, *Sedum Ewersii*, *Spiraea vestita*, *Swertia cordata*, *Lychnis fimbriata*, *Campanula argyrotricha* and *Pedicularis pectinata* (forming a carpet of a most beautiful little magenta pink flower). The lengthening shadows and chilly feeling of approaching evening made us curtail any further searching, and, making our way along to the eastward end of the crag, we discovered a much smoother and easier descent than the way by which we had come up. It was almost a wrench to leave, and we shall long treasure in our minds the memory of this rock garden of nature. On the way down we came across some *Habenaria*, now faded and over, and a few *Gentiana capitata*. As we were nearing the camp we met my Kumaoni orderly, Bacchi Singh, who, thinking we had missed our way, came out to look for us.

We had been up to 10,500 feet, and it is evident that at this time of the year no flowers grow in any great profusion below this altitude. Returning to camp, my shikari, Satara Khan, said that three bears were reported to be devastating the crops in a village eight miles below in the valley, and as it was on the route of our return journey I sent him off to meet the coolie who was to return there from Srinagar with my cartridges and to gain if possible any further news of the bears' movements. We decided to remain in the bungalow; the sky, in spite of a glorious sunset, looked threatening, and we had already discovered that space for two in an 80 lb. tent is limited. We awoke next morning to find a clear sky and to be greeted by a most wonderful view of the now cloudless mountains and of the valley beyond. Below us, ten miles away, was the Wular Lake with its fifteen-mile stretch of water, and beyond one could see the Jhelum River, a thin silvery thread winding its way through the Kashmir Valley. With the aid of glasses we could even clearly see our house-boat, and noted with chagrin that another had moored close to us. By 9 a.m. the ponies were loaded up and Nell tried several snapshots of them, but the light by then was none too good. Our special comic one is the cook pony, looking for all the world like an armoured snail, covered as she is by pots and pans and other "impedimenta," her small legs appearing from under her bulky load; little else of her is to be seen.

The descent to the valley was not so attractive as the way by which we had come up; the timber was smaller and the hillside smoother. Six miles down we emerged into a cultivated valley, and here we found Satara Khan waiting by the side of the track. I knew the moment I saw his face that things were not well with him, and, sure enough, he had bad news: the coolie from Srinagar had returned empty handed—no .450 cartridges were to be obtained there. To emphasise the bad luck, he narrated at length the number and size of the bears he had seen that night in the crops. Well, it could not be helped. I had only myself to blame in this land of blunders that my cartridges were not all right.

Another hot three miles brought us to the shores of the lake, and Lassoo, our head man, began bargaining for a boat to take us back across the lake and down the Jhelum to Sopor, where we had left the house-boat, distant about twelve miles. An enormous craft, manned by seven lusty Kashmiri, was produced; the ponies, much to the poor little beasts' relief, were off-loaded and the whole of the kit was piled amidship; our followers were packed in "aft," a table and two chairs placed "forrard." "Tiffin," we were informed, was to be served en route. Whilst waiting for the boat to be loaded Nell took a smaller one and went across to see the sacred *Lotus*, acres of which were growing some eighty yards out from the shore. One can hardly describe the beauty of this flower, which is some nine inches in diameter, its petals a lovely pink, shading to yellow at the base, with huge receptacle of bright yellow in the centre. Unlike a Water Lily, the flower does not float, but stands up some two feet from the water; its huge leaves, two feet across, floating in tangled masses, form seemingly solid green platforms in every direction.

Soon after the start we discovered the heat of the sun to be almost unendurable and a canopy was erected on two punt poles with blankets. A lunch of cold chicken and ginger-bread nuts, and then, in spite of the beauty of the lake, we dozed off, to wake and find ourselves entering the Jhelum three miles above Sopor.

FLORA'S LEAGUE.

Maurice Abbot-Anderson, K.C.V.O.

I take great pleasure in penning the following particulars of the above League, which I founded last June for the protection and preservation of Wild Flowers in the British Isles. At the same time, it is a healthy sign that I have received correspondence even from Malta, and have sanctioned the formation of a branch in that Island.

On all sides there is definite evidence that now is the psychological moment to " make a noise " in order to attract attention to this important matter, and to achieve something practical. The County Councils' Association, recognising disaster staring us in the face, recently deemed it necessary to pass a bye-law to protect their respective county floras against vandalism. This followed on the example of Hertfordshire and stands to the credit of that county, and I trust it will be universally copied.

We of Flora's League are not kill-joys! There is no reason why children visiting or residing in the country should not freely pick dandelions, daisies and buttercups to their hearts' content if they wish to do so, but the League would teach them unselfishness even as regards these common flowers.

Every County Council should issue its own directions in particularising as to the necessity of protection for this or that plant. For instance, Berkshire and Oxfordshire would under this scheme schedule the Fritillary. Cambridgeshire would do the same for the Pasque Flower, and so on. Each Council could, if it wished, receive expert advice from a reputable botanist, living in the district and possessing intimate knowledge of the exigencies of the situation. There would be no need to indicate the station of a scheduled plant; only the name of the plant and the county need be stated.

There is a consensus of opinion that the chiefest means to obtain a definite and lasting result must be by the education of our children. I am, therefore, anxious to enrol as many children as possible, and to this end (whilst recognising the arguments against), I decided that it was essential to have a badge symbolising the League. The question then arose as to whether a charge should be made for this token, and the definite conclusion was arrived at that if the badge was presented free to each member, it would not be valued at the same worth as it would be if a small charge was made for it. As, however, the primary object is not to raise money, and as I am anxious that every member shall possess a badge, it has been decided to charge for this on a " sliding scale," the maximum to be one shilling, and the minimum a penny. Every badge is sent out in a little box, wrapped in a pamphlet indicating shortly the main objects of the League, as under:—

78 PORTLAND PLACE,
LONDON, W.1.

MEMBERS OF FLORA'S LEAGUE,

Do you know that our Wild Flowers are disappearing? Some of them can no longer be found.

FLORA'S LEAGUE

has been formed to protect them against thoughtless people who are picking and uprooting them faster than they can grow.

Therefore, *wear your badge*, and

Don't pull wild flowers; *cut* them when possible, as pulling disturbs the roots.
Don't *dig up* wild plants; they will not grow in gardens.
Don't pick *early* in the day; they will only wither.
Don't pick *greedily*; leave for others to enjoy as well.
Don't pick *any* specimens of a flower if you know it is rare; leave for seeding purposes.

Please acknowledge the receipt of the enclosed Badge, and if you do not wear it yourself, give it to someone who will promise to do so.

Tell your friends about the League, and ask them to join; there is *no* subscription, and they should write to:—The Secretary of Flora's League, 78 Portland Place, London, W.1.

I am anxious that it should be distinctly and clearly understood that beyond this there is *no* other financial obligation associated with membership.

I am enrolling " all and every " as members, and I am desirous of gradually mapping out the whole country into areas, each with its local secretary, who (it is suggested) besides enrolling new members, will, where possible, act as " guardians " of the rare and scarce plants in each neighbourhood, and use every practicable means to protect them. Will those who are willing to act as Local Secretaries kindly send me their names and addresses, mentioning the possible range of their guardianship?

In order to bring the matter more closely home to the young folk, I am arranging, in association with Dr Green, of Birkenhead, popular lectures with lantern slides. On March 15th last, Dr Green gave such a lecture at the London Day Training College, Southampton Row, London, W.C., under the combined auspices of the School Nature Study Union and the School Journey Association, at which I had the privilege of taking the chair, and it met with a brilliant success. We purpose continuing this propaganda.

I am suggesting to all local branches that when 250 members have been enrolled in any one district, I will make every endeavour to enlist the services of Dr Green to arrange a social evening in that district, and to attend myself to distribute the badges.

I shall be very glad to receive any suggestions, inquiries or applications for membership, which should be addressed to:—The Secretary of Flora's League, 78 Portland Place, London, W.1.

Finally, I would wish to refer to Mr Salt's book, "Our Vanishing Wild Flowers," published last year by Messrs Watts & Co., Johnson's Court, Fleet Street, E.C.4., and which is now in the Second Edition. The book was published with the definite purpose of focussing attention on this menace. The chapters are delightful reading and state the case very clearly. To this little book I was privileged to add an "Afterword," which indicates our activities at the time. I am delighted to say we have advanced by leaps and bounds since this was written.

Flora's League was then only in embryo, but she is now fully fledged and can count several thousands of chicks in her yard. Come and join us!

I feel very confident that if all those who are interested in the cause will give me their loyal co-operation, "Flora's League" will emulate my old school motto:—"Vires Acquirit Eundo."

PERSONALIA AND VARIOUS NOTES.

Mr T. W. Taylor has been appointed to succeed Mr W. J. Bean as Curator of the Royal Botanic Gardens, Kew.

Mr F. J. Hanbury, Brockhurst, East Grinstead, is anxious to have seeds of rare British plants. He will defray expenses.

Mr A. E. Wade, Botanical Department, The National Museum of Wales, Cardiff, would be glad of assistance in preparing a Flora of Monmouthshire.

The Secretary of the B.E.C. is anxious to obtain the Secretary's Reports for 1879, 1903, 1909, 1916, 1917 and 1922, and the Distributor's Report for 1926.

Capt. J. Ramsbottom now succeeds to the Keepership of Botany at the British Museum, Cromwell Road, where we wish him a most successful term of office, and offer him hearty congratulations.

Mrs Perrin, 23 Holland Villas Road, London, W.14, is continuing her beautiful paintings of British plants. Members willing to help are asked to communicate with her.

Mr N. Woodhead, M.Sc., assistant Lecturer in Botany at University College of North Wales, Bangor, is preparing a new Flora of Carnarvonshire. We wish him every success.

The veteran, Prof. A. H. Sayce, has been made an honorary fellow of the British Academy and has received the Huxley Memorial Medal of the Royal Anthropological Society.

The Rev. W. Keble Martin, Coffinswell Rectory, Newton Abbot, Devon, is painting British plants. He would be glad if members would send him fresh specimens. He will supply list.

Mr C. H. Wright has retired after 45 years of service at the Kew Herbarium. He was made an A.L.S. in 1896. He began his work at the Oxford Botanic Gardens, going from there to Kew.

Mrs Isabel Adams, F.L.S., is painting British Aquatics. Members wishing to help in sending specimens should apply for a list of those wanted to 14 Vernon Road, Edgbaston, Birmingham.

Mr J. Gordon Dalgleish, F.L.S., 50 Tisbury Road, Hove, Sussex, is preparing a Flora of Sussex. Members having Sussex notes are asked to communicate with him, or send in orders for the Flora.

ALBINOS. White-flowered forms or white varieties of *Geranium Robertianum*, *Gentiana campestris*, *Linaria Cymbalaria*, *Convolvulus arvensis* and *Digitalis purpurea* have been found to breed true.

AT the Nottingham Exhibition in the Forestry Section of the Royal Agricultural Show, an exhibit was made by our member, Mr G. J. V. Bemrose and others, for which the highest award of the Silver-gilt Medal in that section was given.

WE are glad to know that the historic and beautiful mansion of Holme Lacy, with its estate, has been given to the County of Hereford by a lady who wishes to remain anonymous. The grounds, through which the River Wye passes, cover 340 acres.

A BRONZE portrait plaque memorial of Sir William Schlich was placed in the School of Forestry at Oxford, on Thursday, May 23. It was unveiled by the Vice-Chancellor, Dr Pember. A portion of oak woodland near Oxford is to be called the Schlich Forest.

MR T. A. DYMES, F.L.S., Carthona, West Drayton, Middlesex, wants ripe capsules of British Orchids, especially *Malaxis*, *Corallorrhiza*, *Cephalanthera longifolia* and *C. rubra*, the Irish *Spiranthes* (north and south), *Listera cordata*, *Epipogium* and *Ophrys Trollii*.

A NEW Sundial has been presented by Prof. C. V. Boys to Kew Garden ("The Times," November 25, 1929) and is a beautiful example of craftsmanship as well as being of scientific interest. The pillar on which it rests was one of the balusters of old Kew Bridge, of which many are at Hartwell Park, near Aylesbury.

On the retirement of Prof. F. W. Oliver from the Quain Chair of Botany, University College, London, a fund was raised to commemorate his work. With the subscriptions an Oliver Commemoration Bursary of the value of about £20 has been instituted for the purpose of assisting graduate research in Botany. Prof. F. O. Bower presided at the most successful dinner given in University College on July 3, 1929.

MR E. W. SWANTON, on July 9, gave a very interesting address at the Haslemere Educational Museum, the title being "Thirty Years Teaching at a Country Museum." This is the Haslemere Museum of which Sir Henry Miers said it was the only effective (other than the National Museums) Educational Museum in the country. In nine examinations since 1898 a thousand children took part and 441 passed.

DR A. H. HILL, C.M.G., F.R.S. (see *Nature*, 133, 1929) lectured on "The Original Home and Means of Dispersal of the Coco Nut." He favours the Indian Archipelago or Polynesia as being most probable, and this is supported by Beccari, who shows that the great robber crab, *Borgus latis*, used the husk of the nut to line its burrow. The sea is one of the great means of dispersal, the nuts being ocean-borne for great distances.

Brotex. Some sensational statements have been made as to the value of this plant as a source of fibre cellulose for paper-making, and seed for cattle cake. In the course of fifteen or sixteen months it is said to attain a height of about 16 feet and a girth of 8-10 inches. A firm of analytical chemists say that it gives a yield of 39 tons per acre of cellulose, worth about £15. Up to the present the name of the plant has not been revealed to me. It is said to belong to the Malvaceae.

The City of Leicester Museum (E. G. Lowe, Ph.D., B.Sc., Director). —At the University College is being formed a collection of living plants arranged according to the Families by Mr G. J. V. Bemrose, the Museum, Leicester. He is very anxious to obtain seeds and specimens of British plants, and it is trusted that our members will assist him. We may add that the annual cost of the Museum is £7042, of which £6680 comes from the rates. The attendance of visitors for the year had the satisfactory total of 284,334.

Down House. The home of Charles Darwin from 1842 till his death on April 19, 1882, was officially presented by Mr Buckston Brown, F.R.C.S., on June 7. The meeting was largely attended. Sir William Bragg thanked Mr Buckston Brown for his national gift to the British Association. Sir Arthur Keith declared the building open. Already much furniture and many articles connected with Darwin are replaced in this beautiful house. Dr Joseph Leidy and Prof. R. Anthony also spoke on behalf of the United States and France. The Secretary represented the Botanical Exchange Club on the auspicious occasion.

Dr N. Lord Britton has retired from Bronx Park, New York Botanical Gardens, which, under his supervision since 1896, have been raised from a waste to what is said to be the third largest Botanical garden in the world. So popular are they that the average Sunday attendance is over 50,000. During the vacations, Dr and Mrs Britton have made over twenty excursions to the West Indies, the known Flora of Trinidad especially has been much enlarged by their industry. His magnum opus, prepared in collaboration with Mr J. N. Rose, is the four volumes on the Cactaceae, produced for the Carnegie Institute. Dr Britton and Mrs Britton are spending the winter in the West Indies. Dr Britton is succeeded at Bronx Park by Elmer Drew Merrill, Dean of the College of Agriculture in the University of California.

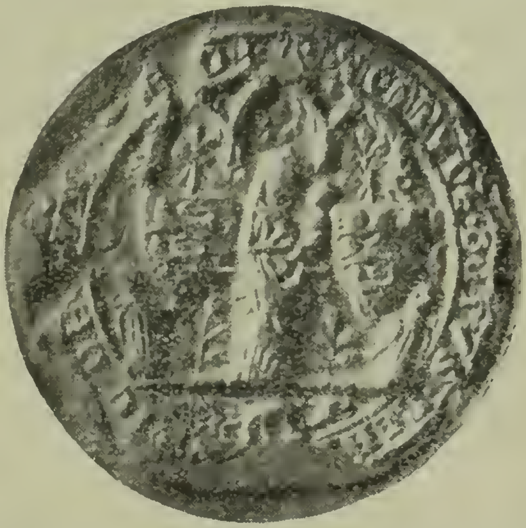
National Trust for Places of Historic Interest or National Beauty, 7 Buckingham Palace Gardens, Westminster. Report, 1928-1929, pp. 131. With views of Stonehenge, Wall End and Stoot End Farm, Great Langdale; Cockley Beech Farm in the Duddon Valley; Bee Holme, Windermere; the view north from Post Knott; the Lion Rock, Cheddar and the Bridge House, Ambleside. In addition to these properties the Trust has also acquired land in Great Langdale, Castlebarrow Head, Silverdale (27 acres), Dover's Hill, Gloucestershire; 64 acres of land at Whipsnade, Herts; the Moat House, c. 1500; Earlswood, with 50 acres of land. It is gratifying to know that there are now over 1000 subscribers. Our member, the Hon. Oliver Brett (Lord Esher), has given a most magnificent donation of £1000 to the general endowment fund, and Prof. G. M. Trevelyan, in addition to land, has given £1650 for Doren Hill. There was also a donation of £20,000 towards the purchase of the Ashridge Estate.

WILD FLOWER PROTECTION. On another page will be seen an appeal on the subject from the Floral League. A mass of correspondence has occupied the pages of "The Times" and other newspapers. Conferences have been held and legislation is asked for. At present we believe a Bill is being drafted for the purpose. More than forty years ago I took part in the movement and Lord Avebury drew up a circular asking the Natural History Societies in Britain for their support. Curiously enough this was not forthcoming and we could not get enough outside support to warrant going on with the Bill. Since that time the spread of Nature Study has increased the necessity for some scheme of protection and if possible to educate the teachers to be careful that their charges do not gather too freely and always avoid plucking roots. The Bishop of Gloucester wrote a very wise letter to "The Times" on the subject. It does, indeed, seem that it is time that protective legislation should be passed; but its application is surrounded with difficulties. Mere protection without a penalty would be useless. It would perhaps be best for each county to frame a list of seven to ten plants which should not be rooted up and sold by hawkers. This might be extended to include the ferns—save the Bracken, of which our Midland woodlands are now nearly denuded. In the counties immediately under my survey it would seem wise to schedule *Anemone Pulsatilla*, *Daphne Mezereum*, *Leucojum aestivum* and *Fritillaria*. But perhaps it might be found easier to schedule areas rather than specific plants. Despite all that has been said about depredators the greatest harm has been done by building or reclaiming operations. This was long ago felt to be the case by the Hon. N. C. Rothschild and others, and it was for that reason that the Society for the Preservation of Natural Areas was founded. With him, we drew up a schedule of places that it was most desirable to acquire, or have protected, and for that purpose I visited the greater part of the British Isles. The results are preserved in the archives of the Society. This Society, under the Presidency of Viscount Ullswater, has issued thousands of handbills with the view of lessening the wholesale destruction which goes on around us.

BRITISH SCIENCE GUILD.—A meeting of the British Science Guild was held in the Mansion House, London, E.C.2., on April 24, the Right Hon. Lord Melchett, D.Sc., F.R.S. (President), in the chair. The Chairman, in opening the proceedings, briefly indicated the scope of the three addresses that followed. The problem of the production of artificial fertilisers, his lordship pointed out, was not entirely new. In 1881 Dr Ludwig Mond had indicated the importance of the researches of Lawes and Gilbert. In 1880, South America exported 750,000 tons of nitrate: the same country now exported approximately 2,500,000 tons per annum, and yet the output of the synthetic product far exceeded that of the natural salt. Billingham produced in 1928 eight times the output of 1924 and four times that of 1927. This year it was hoped the total would reach 750,000 tons. After a brief reference to the foreshadowing of artificial silk by Hooke in the latter part of the seventeenth century, Lord Melchett called upon Sir Frederick Keeble to give an address on "Fertilisers from the Air." The speaker gave an estimate of the almost unlimited quantity of nitrogen in the atmosphere—4,000-million-million tons. Mixed with chalk (which was a by-product at Billingham) ammonium nitrate formed a valuable fertiliser. The year 1913 marked a dividing line in the history of the world: prior to that time plants were limited in their supplies of nitrogen, but with the advent of synthetic nitrate all was changed. One great cause of a lack of prosperity was thus removed. Holland and Belgium led the world at present in the increased use of nitrogen. Holland consumed about 38 lb. of nitrate an acre, Germany about one-third of that amount, Great Britain less, France less still, and the United States only 1.8 lb. Japan, Java and Egypt were great users, and China had increased the consumption by more than 1,000 per cent. during the last few years, while India was just beginning to awaken in that respect. Concentrated fertilisers were now being made—an obvious boon in districts where transport was bad. The British had in this industry a new and great opportunity. The second address, delivered by Mr A. B. Shearer, was entitled "Rayon (Artificial Silk)." The following is an abstract:—"Rayon is the generic name of the filaments produced by any of the recognised processes: 'artificial silk' is a misnomer. The rayon industry is already more than three times the size of the silk industry, and ranks only after those of cotton and wool. Sir Joseph Swan devised filaments of this material in 1883 for his gas-filled lamps, and two years later exhibited fabrics made from his yarns. Numerous patents have been granted for different processes. The large-scale manufacture of this product had important reactions on the chemical industry, and engineering had also been stimulated. The commercial product was now so finely spun that 1 lb. made 170 miles of thread, and rayon could be spun much finer than silk. It was estimated that the industry employed 300,000 workers. In 1928, 50,000,000 lb. of rayon were produced in this country."—*Chemist and Druggist.*

BELLADONNA IN A SEAL.—Amidst the wreckage remaining from the Tudor spoliation of the monasteries are the instructive deeds of surrender, with their signatures and attached seals, which gave due transfer to one whom Leigh Hunt, with his peculiar aptness for terse statement, calls (in his "The Town") "the most bloated enormity" that ever misused such glories. Amongst these seals is one of direct interest and application to pharmacy, the one attached to the instrument which conveyed to a cupidinous monarch the possession of the great Cistercian Abbey of Furness in the northern portion of the county of Lancaster.

The interest is the incorporation of belladonna, in the form of the leaf, as an integral portion of the seal of this abbey. The reason is perhaps not apparent to those who are not acquainted with the local topography and flora of the hundred of North Lonsdale. The estuaries of the rivers in the southern portion of the Lake District are still the home of many long patches of deadly nightshade, where, owing to the shingled beaches, the plant is protected from ravages of slugs. Alas! spoliation and other causes are robbing even these parts of many of our rare plants, and amongst them belladonna. Furness Abbey is located in "Beckang's Gill," a characteristic local name, otherwise the "Glen or Vale of Deadly Nightshade," a short distance from either Dalton-in-Furness or Barrow-in-Furness. The immediate neighbourhood, where the becks run red with iron ore, was characterised by a luxurious growth of this native plant, and hence in a measure may be found an explanation for the incorporation of this phyllomorphic design as a portion of the seal. The slightly damaged seal is about 1¾ inch in diameter, and a characteristic type of fourteenth-century design. Some years ago a friendly local antiquary gave me a lantern slide of the seal, and from the reproduction the essential details can be traced. The outer circle bears the following inscription (transcribed in full):—Sigillum Commune Domus Beate Marie de Furnesio (The common seal of the house of the blessed Mary of Furness). Note initially the three beautiful cusped and pointed arches, most exquisite examples of the engravers' art; the mouldings, terminating on each side in a lion's face; then particularly examine the contents of these arches. In the centre one is a figure of the Virgin Mary, over whom is the canopy of heaven studded with stars; on her left arm rests the infant Christ surrounded by a halo of glory, whilst her right hand grips the globe, proclaiming her as the Queen of the World. From the apices of the outer arches sprigs of belladonna are suspended and hold coats of arms. These shields suggest material and physical protection by being on each side; the dexter or right-hand shield bears the arms of



England, being those of King Stephen when Earl of Morton and Boulogne about A.D. 1127; the sinister or left-hand shield is again that of England with a label of three points, perhaps for Thomas Plantagenet, second Earl of Leicester, and commemorating his many benefactions to the Cistercian order. Beneath these are two monks in full dress and cowl, apparently walking upon the same earth upon which the Blessed Virgin stands and from which belladonna is growing. The base of the seal contains a representation of the wyvern, an imaginary animal with the forepart of a dragon, the tail of a scorpion, and the feet of a bird, with wings expanded. The wyvern will be familiar to visitors to the Conference at Leicester as a portion of the arms of the city. Doubts have been expressed as to the leaves being representative of belladonna, but a careful examination will leave no doubt that the outline of the foliage is solanaceous. The British Museum Catalogue of Seals, Vol. 1 (1887), page 561, No. 3177, contains particulars of this seal, and is worth consulting by those interested..—By permission of the proprietors of "The Chemist and Druggist."

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REPORT FOR 1929

OF THE

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(CONVENIENTLY ABBREVIATED REP. B.E.C.)

BY THE

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Floreat flora.

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August 1930.

REPORT OF THE DISTRIBUTOR FOR 1929.

THE number of specimens received for distribution in 1929 was 3699, a considerable decrease when compared with previous years. The critical genera were but poorly represented—very few Rubi, Rosa, Hieracia, or Salix being sent for dispersal. This is all the more to be regretted, as several rare species, the need for which does not seem to be apparent, were included in the parcels. One feels that most members' collections must have arrived at that stage where rarities, as such, are not needed. The critical plants should engage more attention and the rarity allowed to propagate itself. In this way a good deal of the criticism that has recently been levelled at Exchange Clubs would be disarmed, since the most interesting species from our point of view are often among the most common and widely distributed.

The task has been extraordinarily interesting, and a good deal of trouble has been saved by the kindness and courtesy on the part of the contributors. Such acts are typical of Field Botanists generally, and I can only regret that their handwriting is not so helpful as their other works.

Many thanks are due to our member, Mr F. A. Sowter, for the assistance he has given in the distribution.

G. J. V. BEMROSE.

April 1930.

LIST OF PARCELS RECEIVED.

	No. of Specimens.
L. Arsène,	506
S. H. Bickham,	90
C. E. Britton,	235
G. C. Brown,	49
R. Bulley,	125
R. J. Burdon,	178
G. C. Druce,	638
H. Foster,	136
J. Fraser,	136
L. B. Hall,	100
P. M. Hall,	92
H. H. Johnston,	30
J. E. Little,	93
J. W. Long,	82
J. E. Lousley,	229
R. Melville,	50
Rev. H. J. Riddelsdell,	64
F. Rilstone,	114
Miss I. M. Roper,	70
C. E. Salmon,	19
F. Sowter,	28
National Museum of Wales, Botanical Department,	101
C. Waterfall,	286
Prof. F. E. Weiss,	20
J. W. White,	117
I. A. Williams,	21
A. Wilson,	90
	3699

In addition, Prof. Beattie sent a most valued set of American species. See list at end.

Ranunculus radians Revel, var. *Godronii* (Gren.). Alveston, W. Gloster, May 28, 1929.—I. M. Roper. "Very robust examples of this variety, clearly approaching the type, and affording strong evidence of relationship with *R. radians* rather than with *R. trichophyllus*. My specimen shows most careful selection of material—flowers, fruit and foliage in perfect condition and most carefully displayed—and reflects the greatest credit upon the collector."—Pearsall.

Ranunculus sphaerospermus Boiss. & Bl. Winterborne Steepleton, Dorset.—G. C. Druce. "There is only one medium-sized flower on my sheet and its stalk is exactly an inch long. Two other peduncles (from which the flowers have dropped) are under 2 inches in length. They are much too slender and short for this species, in my opinion, and belong, rather, to *R. trichophyllus* Chaix.—Pearsall.

Ranunculus psuedofluitans, var. *minor*. Axe Stream, Cheddar, June 7, 1929.—J. W. White. "Correctly named. These are good examples of Hiern's form *pseudofluitans*."—Pearsall.

Ranunculus peltatus Schrank. Burgh St Margaret, Norfolk, July 11 and 20, 1929.—R. J. Burdon. "These are typical specimens of *R. circinatus* Sibthorp."—Pearsall.

Fumaria parviflora Lamk., var. *acuminata* Clavaud. [Ref. No. 782.] Flowers suffused with pink. Galley Hill, Stopsley, Beds., June 9, 1929. Small specimens. The field was, however, being fed off by sheep so that the plants would soon have vanished.—J. E. Little.

Fumaria officinalis L. A small showy form. Cornfield near Looe, East Cornwall, June 8, 1889.—F. Rilstone.

Radicula palustris Moench. Near Capenhurst, Cheshire, August 17, 1929.—C. Waterfall. "Right for Dr Druce's List, 1st Edition, but in the second he names it *R. islandica* (Oeder) Dr., with the duplicate *Nasturtium islandicum* (Oeder). Most other books have been shifting about these names and authorities for the last 70 years to my knowledge."—Fraser. "*Islandica* is used because it is the earliest trivial. *Nasturtium* is given in the List as a duplicate name for those who follow Engler."—Druce.

Erophila Boerhaavii (Van Hall) Dum. Holton Pits, Oxford, 1914.—G. C. Druce.

Erophila Boerhaavii, var. *decipiens* (Jord.) Schultz. Cothill, Berks, 1914.—G. C. Druce.

Erophila verna (L.) E. Meyer, var. *acrocarpa* (Brenner) O. E. Schultz. Frilford, Berks, April 1929.—G. C. Druce.

Sisymbrium polyceratium L. Garden weed, Underdown, Ledbury, Hereford, July 1929.—S. H. **Bickham.** "At one time it was described in the British Floras, but many of the species fail to get truly naturalised. It would be interesting to know how it got into the garden at Ledbury."—**Fraser.**

Bursa ——? Burgh St Margarets, Norfolk.—R. J. **Burdon.**

Lepidium ruderale L. [Ref. No. 324.] Cosham, S. Hants.—P. M. **Hall.** "The form of the fruit and the pale, orange brown, non-bordered seeds seem to indicate *ruderale*."—**Drabble.**

Hesperis matronalis L. Plentiful in a pasture near Cuxham, Oxon, June 1929.—G. C. **Druce.**

Bursa gallica (E. At.), teste E. Almquist. Wheatley turn, Oxfordshire, June 1929.—G. C. **Druce.**

Viola silvestris Lam., var. *punctata* Dr. Ledge Wootton, Chelwood, N. Somerset, April and November 1929.—I. M. **Roper.**

Viola canina L. × *lactea* Lam. [Ref. No. 328.] Wootton Heath, near New Milton, S. Hants, June 4, 1929. This particular form of the hybrid appears to be referable to Watson's *intermedia*. A plant similar to the larger of those distributed is very probably the origin of the erroneous record of *V. stagnina* for the New Forest. Mr J. E. Lousley suggests that these larger plants may be "giant" hybrids arising from the duplication of the chromosomes.—P. M. **Hall.**

Viola hirta, L., var. [Ref. No. 209.] Kingley Vale, West Sussex, April 1929. This gathering differs both from *V. hirta* L., var. *Foudrasii* (Jord.) R. & F., and from *V. calcarea* Greg. It differs from the former in having straight, not hooked, spurs except in a very few specimens and from the latter in the following characters:—(1) The spurs though nearly always straight are in many cases as long as in *V. hirta* L.; (2) The flowers have not the "Maltese Cross" shape; (3) The time of flowering is normal, the same as, and not later than, *hirta*.—P. M. **Hall.**

Viola lepida Jord. Tongue, W. Sutherland, August 1923.—G. C. **Druce.** "Yes; *lepida*, with unusually broad sepals. One plant on my sheet is gathered in its first year and the other is without the characteristic basal parts, but I saw Dr Druce's gathering and named the plants for him."—**Drabble.**

Viola ruralis Boreau. Gangsdown Hill, Oxford, July 1929.—G. C. **Druce.** "Yes; I named this plant for Dr Druce."—**Drabble.**

Viola contempta Jord. Coleman's Moor, Berks.—G. C. **Druce.** "Yes; this must be called *contempta*, though the leaves are very broad for this pansy. However, I saw more typical specimens when I named this gathering."—DRABBLE.

Viola variata Jord., var. *sulphurea* Drabble. Bradenham, Bucks, June 1929.—G. C. DRUCE. "Yes; though my sheet is not very typical. The spreading habit, the lower leaves and the stipules, however, leave no doubt that it is *V. variata*, var. *sulphurea*. The locality is in the *sulphurea* area and I have quite typical plants from Bradenham."—DRABBLE. "Quite like my specimens in the dried state from Surrey. I hesitated about Dr Drabble's variety until, in a revision, he said—'Occasionally the flowers may be entirely whitish-yellow, or the upper petals may be tinged with blue or violet.' There is less blue in Dr Drabble's specimens, otherwise they are identical. The white becomes pale yellow when dried."—FRASER.

Viola Deseglisei Jord. [Ref. No. 776.] Near Tingley Wood, Herts, June 24, 1929.—J. E. LITTLE. "Yes; excellent *Deseglisei*. The plant on my sheet is rather narrow leaved. I named this for Mr Little."—DRABBLE.

Viola Deseglisei Jord. [Ref. No. 788.] Albury, E. Herts, August 2, 1929.—J. E. LITTLE.

Viola Deseglisei Jord. Lurgershall, W. Sussex, August 10, 1929.—R. J. BURDON. "Rather more pubescent than the Norwich specimen, but the violet of the appendices of the sepals is more marked and the plant, having been pulled up by the roots, shows that it is branched from the base."—FRASER.

Viola Deseglisei Jord. Burgh St Margarets, Norfolk, July 4, 1929.—R. J. BURDON. "Young, but unmistakable."—DRABBLE. "Conforms to the specimens at Caistor, Norfolk, with more violet sepals. There is a cluster of small plants that had been growing in sand, and the leaves do not show the best gradation so well, but they are the same as I have been calling *Deseglisei* Jord. This species is fairly common in Surrey."—FRASER.

Viola Deseglisei Jord. Caistor, Norwich.—R. J. BURDON. "I have seen only two sheets, one may be *Deseglisei*, the other is quite indeterminate, bearing only immature plants."—DRABBLE. "Answers to the description in having deep, blunt, irregular, forwardly pointing teeth to the leaves, and the violet spur, but the appendages of the sepals are not so greenish-violet as I usually find them. The larger of my two specimens is imperfect in lacking the roots and lower leaves."—FRASER.

Owing to an oversight the complete gatherings of pansies were not sent to Dr Drabble so that his determinations refer only to such sheets as he has seen.—Editor.

Polygala vulgare L. Tall form. Cliff slopes, Polperro, East Cornwall, July 15, 1929.—F. Rilstone.

Silene dubia Herb. Fort Cumberland, Portsea Island, S. Hants, June 6, 1929.—P. M. Hall.

Cerastium viscosum L., var. *macropetalum* Druce. [Ref. No. A.44.] By a stream, Poldhu Cove, near Mullion, West Cornwall, May 27, 1929. A fine big *Cerastium* which I take to be the above variety although I have not seen authentic specimens.—J. E. Lousley. "Yes; the petals exceed the sepals by 2 mm. or more as in forma *macropetalum* Druce. See *Rep. B.E.C.*, 1922, pp. 30-31."—Drabble. "Seems to me to be correct or inseparable. The petals are much longer than the sepals, whereas in the type, *C. viscosum*, they are about equal."—Fraser.

Stellaria neglecta Weihe. Hedgebank near Publow, N. Somerset, Juno 11, 1929.—J. W. White.

Stellaria umbrosa Opiz. About Pensford and Wollard, N. Somerset, May 1929.—J. W. White.

Stellaria graminea L. [Ref. No. 3503.] Littleworth Common, Surrey. A curious form in which the petals have taken on a sepaloid character, being green, ribbed and undivided. The stamens and carpels appear normal.—C. E. Britton.

Polycarpon tetraphyllum L., var. *densum* R. & F. Dry places, bases of walls, banks and roadsides, Gros-Nez, Jersey, August 8, 1928.—L. Arsene.

Claytonia Alsinoides Sims. Cadeby, Leicester.—F. A. Sowter. "The labels should be altered to read *Cadeby* not *Cadby* as shown."—Ed. "Now named *C. sibirica* L."—Druce.

Hypericum perforatum L., forma ? Thirsk, Yorks, August 1929. I was very doubtful about this garden weed in Mr Foggitt's garden. It has been named *Desetangii* Lam.—G. C. Druce.

Malva nicaeensis All. Splott, Cardiff, Glamorgan, September 18, 1929. All the specimens were gathered from one large plant that was found growing on an allotment, the owner of which very kindly allowed the plant to remain undisturbed. Some of our members will be interested to know that this plant was growing on the same allotment which gave us *Roemeria* a couple of years ago.—R. Melville and R. L. Smith.

Althaea hirsuta L. Reclaimed land, Newport, Isle of Wight, September 1929.—J. W. Long.

Geranium sanguineum L. Dyserth and Cwm, Flint, June 1928; near Silverdale, W. Lancs, May 30, 1929.—C. WATERFALL.

Erodium cicutarium L'Hér., var. *pimpinellifolium* (Sibth.). Potato garden, Alwick, E. Yorks, September 16, 1929.—R. BULLEY.

Impatiens parviflora DC. Bank of River Alyn, near Rossett, Denbigh, September 4, 1929.—C. WATERFALL.

Medicago arabica Huds. [Ref. No. 326.] Porchester, S. Hants, June 2, 1929. This gathering is sent to call attention to the fact that the plant is described as glabrous in Hayward's Pocket-Book. The description in Bentham and Hooker, "plant almost glabrous . . . a few spreading hairs on the leaf stalks," appears to be more accurate.—P. M. HALL. "Correctly named. 'Plant almost glabrous,' as Mr Hall says, would be more correct than glabrous, for the stem, branches, peduncles, leaves and stipules of his plant are thinly pilose. The teeth of the legume are said not to be hooked, though curved, yet I find a few of them distinctly hooked."—FRASER.

Trifolium ochroleucon Huds. Dry meadows and grassy banks. Rare in the island and perhaps not native. St Saviours, Jersey, July 1, 1928. —L. ARSENE. "Quite correct. The flower head is nodding. The anterior tooth of the calyx is twice as long as the rest or more. The free part of the stipules is very long and narrowly attenuate."—FRASER.

Trifolium Molinerii Balb. On a rocky hillside at Rouge-nez, Jersey, June 1, 1928. In 1925 I distributed a few sheets of this plant collected at the classic Jersey locality, Portelet Bay. M. de Riencourt de Longpré, to whom specimens were submitted, put them under the variety *stramineum* (Presl) Rouy. The Jersey plant is rarely found with rose flowers; they are usually white or straw-coloured as in the specimens I distribute this year. The descriptions given by Rouy for this plant and the related varieties are not precise at all. He writes of his sub-variety *roseum* of *T. incarnatum* (*T. Molinerii* Balb.) "fleurs roses ou d'un blanc rose," and of his sub-variety *stramineum* "fleurs d'un blanc jaunâtre souvent teinté de rose." There is not much difference in the two descriptions.—L. ARSENE. "Yes; *Molinerii*, I think. Dr Druce is right in placing *stramineum* under *incarnatum* as the pale-flowered form of the cultivated plant and in keeping *Molinerii* separate at present. The distinction of *Molinerii*, however, is a subject for further enquiry. The Lizard plants may have the inflorescence conical or cylindrical while *incarnatum* may have the hairs on the stem spreading or more or less adpressed."—DRABBLE. "Correct. I would retain the name *T. Molinerii* for the straw-yellow or white, and truly wild plant. From a field of the cultivated Crimson Clover (*T. incarnatum* L.) I have collected pure white ones, and another having rose flowers, tipped with white. The latter may be a reversion to an original rose-coloured strain from which the crimson form was evolved by cultivation and selection."—FRASER.

Trifolium suffocatum L. Minehead Golf Links, N. Somerset, May 15, 1929.—P. M. Hall.

Anthyllis maritima Koch. Le Portelet, Jersey, May 1928; Le Quennevais, with the var. *ochroleuca*, June 1928.—L. Arsene.

Anthyllis maritima Koch, var. *ochroleuca* Corb. Le Quennevais, Jersey, June 1928. Differing from the type by its cream-coloured flowers. Grows with the type (whose flowers are pale yellow) in a number of localities in the island, but is much less common. At Portelet Bay, I did not find the variety with the type, but on the Quennevais both were growing together. *A. maritima*, as well as its variety, *ochroleuca*, is a stout hairy plant with a stem almost woody at the base.—L. Arsene. "Answers the description quite well. A very hairy plant, with the hairs adpressed on the stem, the latter tall, often branching, with many flower heads. Another *A. maritima*, or the same, has been described by Schweigger, but they are generally regarded as varieties of the polymorphic, *A. Vulneraria*, though the 'London Catalogue of Plants' accepts Schweigger's name as a species."—Fraser.

Lotus siliquosus L. Basildon, Berks, July 1929. Discovered here by V. Murray. See *Rep. B.E.C.*, 315, 1913. It has maintained its own, but was evidently introduced as it is close to a young plantation.—G. C. Druce.

Astragalus boeticus L. Bath, Somerset, July 1929. Shown to me by Mr Green. It has been in this situation (bank of the canal) for some years.—G. C. Druce.

Vicia Cracca L., forma *pallidiflora*. Shipham-on-Mendip, Somerset, August 1929.—J. W. White.

Vicia Orobus DC. Near Pentre Foelas, Denbighshire. Widespread in the district and locally abundant.—A. Wilson. "Rightly named."—Fraser.

Alchemilla minor Huds. Hedgebank near Abinger, Surrey, September 1929.—E. C. Wallace.

Pyrus Malus L., a. *sylvestris* L. Broughton, Oxon, September 21, 1929. This comes closer to my idea of the true wild crab than most of what is called *acerba* DC. in the British Museum Herbarium. It is too late for the calyx, but there is hardly any pubescence on the leaves, petiole or pedicel; the fruit is small and leaves are narrow and on rather long petioles. Small bush on edge of a copse.—H. J. Riddelsdell.

Sorbus Aria Crantz. [Ref. No. A.61.] By a pond on Ranmore Common, near Dorking, Surrey. The leaves of the flowering shoot vary greatly in Surrey plants of this species. The examples now sent are in no way extreme, and I cannot refer them to any described form, but they do not seem quite typical.—J. E. LOUSLEY. "Correctly named. Rather a small-leaved form, but not separable from the type."—FRASER.

Rubus Marshallii Focke & Rogers. Blackdown, Sussex, August 5, 1929.—R. J. BURDON. "Yes."—RIDDELSDELL.

Rubus saxatilis L. Lily Woods, Silverdale, W. Lancs, May 1929.—C. WATERFALL. "I agree."—FRASER.

Dryas octopetala L. Arncliffe Cloud, Yorks, June 22, 1907.—H. FOSTER. "There are certainly several forms of this plant, but the characters are not linked so as always to give the forms described in Babington's 'Manual,' Editions 2 to 6. Thus, to take two characters only, I have the following forms:—(1) Sepals acute, hairs on calyx and peduncle red (Castle Taylor, Galway; Glyder Fawr, Carnarvon; Norway); (2) Sepals acute, hairs on calyx and peduncle black (Killin; Saint Gorlin d'Arves, Savoie; Norway); (3) Sepals more oblong, shortly pointed, hairs red (Killin, Rigi); (4) Sepals more oblong, shortly pointed, hairs black (Teesdale, and the present plant)."—DRABBLE.

Rosa canina L., var. *leiostyla* (Rip.). [Ref. No. 45.] Behind "Dowding Castle," near Tadworth, Surrey, September 18, 1929.—J. E. LOUSLEY. "Surely there is some misplacement of labels. This cannot be var. *leiostyla*, since its leaflets are simply serrate and its styles far from glabrous. I think it is an ordinary form of var. *lutetiana*, though some specimens have fruits broadly ovoid, and so approach var. *sphaerica*."—WOLLEY-DOD. "My sheet has simple serratures to the leaves and hispid styles. I would call this *R. canina* L., var. *lutetiana* Baker. The var. *leiostyla* should have biserrate leaves and glabrous styles."—FRASER.

Rosa tomentella Lem., var. *Carionii* Déségl. et Gill. Field hedge, Filton, West Gloster, August 27, 1929.—I. M. ROPER. "Not *Carionii*, which is biserrate. This is simply so, and though the leaflets are broadish I see no reason for supposing that it is one of the Tomentellae. It is a *dumetorum* form, best under var. *sphaerocarpa*. Barren stems should not be collected; the descriptions are always drawn up from the flowering branches, and both leaflets and prickles on the barren shoots often differ amazingly, and are most misleading.—WOLLEY-DOD.

Rosa dumetorum Thuill., var. *erecta* W.-Dod. [Ref. No. 3549.] Epping Long Green, Essex, August 17, 1929.—C. E. BRITTON. "I do not think this can be kept from my var. *erecta*, but it is not very characteristic. Too many of the sepals are spreading or even reflexed, and the biserration is full, though weak, many of the denticles being reduced to sessile glands. It makes some approach to var. *sphaerocarpa*, but is better as named."—WOLLEY-DOD. "Seems to me correct in every way in leaves with spreading or sub-erect sepals, very hispid styles, and globose fruits, some of them prolonged into the peduncle."—FRASER.

Rosa —— ? Moorlands near the Minera Lime Works, Denbighshire, N. Wales, September 14, 1929.—C. Waterfall. "A small form of *R. mollis* Sm., with some of the sepals deciduous. The specimens seem to have come from a bush stunted by exposure."—Wolley-Dod.

Rosa omissa Déségl., var. *Sherardi* W.-Dod. [Ref. No. 3555.] Aimes Green, Essex, August 17, 1929.—C. E. Britton. "I think the narrow leaflets, hooked prickles, and very long peduncles all point to this being a *tomentosa* variety, not one of *omissa*, but I am at a loss for a name. I feel sure that continental botanists would label it *R. tomentosa*, var. *subglobosa* Car., which is certainly not that of Smith. I cannot give a better name than *R. tomentosa* Sm., var. *typica*, f. *eglandulosa* W.-Dod." —Wolley-Dod. "The leaflets are rather thinly tomentose, but they are without subfoliar glands, and some of the serratures are without secondary glandular denticles as this variety requires. The fruit is also globose and thinly hispid."—Fraser.

Sedum dasyphyllum L. Wall top, Alverstone, Isle of Wight.—J. W. Long. "Rightly named. The short, fleshy leaves now flattened, the more or less coloured petals about three times the length of the sepals, and equalling the styles or nearly so, are characteristic."—Fraser.

Epilobium —— ? [Ref. No. P.P.521.] Didcot, Berks, August 1929. —G. C. Druce.

Epilobium montanum L., forma. Watersmeet, N. Devon, September 1929. The flowers seemed to be double but the appearance was due to the much deeper lobing of the petals which were nearly white in colour. This form was the prevailing plant over a considerable area.—G. C. Druce.

Æthusa Cynapium L. Bloxham, Oxon, August 1929. Two forms:— One (O) differs in its lighter green foliage and stem; leaves with longer, finer, closer segments, and general bright appearance, with slenderer and more delicate habit. The other form (M), of which a few sheets only are sent, is more familiar, and I always look on it as typical. The flowers of O, on the outside of the umbel, are, I believe, larger: but that point will require verification. The two forms differ at least as varieties; but I do not know which is type, or if either is. Form O has a good deal of the look of *Æ. cynapioides* M. B. Syll., 156 (specimen from F. Schultz in the British Museum), but that has apparently narrower fruit. The two forms grow side by side in some places. At first glance I was reminded by Form O of *Anthriscus vulgaris*.—H. J. Riddelsdell.

Æthusa Cynapium L., var. *agrestis* Wallr. Aynhoe, Northants, September 1929. Cultivation is needed to test the permanence of its characters.—G. C. Druce.

Peucedanum officinale L. Kirby-le-Soken, Essex, August 1929.—G. C. DRUCE.

Daucus gummifer All., var. *genuina* Rouy. Maritime rocks, La Moye, Jersey, July 7, 1928.—L. ARSENE. "Yes."—DRABBLE.

Daucus gummifer All., var. *intermedius* Corb. St Ouen's Bay, Jersey, July 1928.—L. ARSENE. "Yes; the common seaside form, but I am inclined to place it under *D. Carota* rather than *gummifer*."—DRABBLE. "Quite an intermediate form, the stem being elongated, with no basal branches. The umbels of white flowers and their bracts are like *D. Carota*, while the hispidity of the stems recalls *D. gummifer*, especially the woolly hairs about the nodes and on the leaf sheaths."—FRASER.

Caucalis Daucoides L. Burton-on-Trent, Staffs, July 1929. Unfortunately the wrong labels, *i.e.*, *C. latifolia* L., were supplied. The plants sent are *Daucoides*.—G. C. DRUCE.

Galium erectum Huds. Little Almshoe, Herts, June 15, 1929.—J. E. LITTLE.

Galium erectum Huds. [Ref. No. 3501.] Down above Westcott, Surrey, June 23, 1929.—C. E. BRITTON.

Galium Mollugo L. (Restr.). [Ref. No. A.46.] Chalky down below Ranmore Church, Dorking, Surrey, June 24, 1929.—J. E. LOUSLEY.

Galium pumilum Murray. Nore Hill, Chelsham, Surrey, July 8, 1929.—C. E. BRITTON. "Judging from the number of synonyms attached to the above name, we are up against a very variable species. Under *G. silvestre* Poll. (*G. umbellatum* Lamk., etc.), Coste, in 'Flore de France,' vol. ii., p. 250 describes the plant as glabrous or pubescent. I have had the glabrous form as *G. silvestre* Poll. for many years, and the pubescent form as *G. silvestre* Poll., (f) *hispidum* Schrad. The present plant conforms to the latter in that the leaves and stem are pubescent. I have not Murray's description. Additional synonyms to this are *G. pusillum* Sm. and *G. asperum* Schreb. Coste describes a very similar species with short internodes under the name of *G. pusillum* L. (*G. pumilum* Lamk.). This is different from Mr Britton's plant, but the intermixing of names is confusing."—FRASER.

Erigeron Karvinskianus DC., var. *mucronatus* (DC.) Asch. Naturalised on walls, St Helier's, Jersey, May 24. 1929.—L. ARSENE.

Senecio erraticus Bertol. Ramsfold, Lurgershall, Sussex, August 19, 1929.—R. J. BURDON. "Yes; this is *erraticus* Bertol. My sheet shows the slender branches of the very widely 'erratic' inflorescence with small capitula. The one large stem-leaf present has the characteristic lobes spreading at right angles. It should be noted that this is not the plant which Babington erroneously called *erraticus* and which he later, on discovering his error, called *S. aquaticus*, var. *major*."—DRABBLE. "Seems to me to be correct for the species. The plant on my sheet is much branched from the middle, and the achenes are finely downy on the faces, though this is difficult to see even under the compound microscope, because the hairs are mostly on the sunk areas of the four faces, and the achenes persist in lying upon their faces. The seedlings on young plants have only the terminal lobe of the leaf, which is correct for the species. It is widely distributed in France."—FRASER.

Senecio erraticus Bert. Holmesby, S. Hants, September 1929.—G. C. DRUCE.

Senecio aquaticus Hill, forma. Pixey's Mead, Oxford, July 1929. A pretty large blossomed but small plant with leaves less divided.—G. C. DRUCE.

Carduus pycnocephalus L. Waste ground, Yiewsley, Middlesex, June 1929.—R. MELVILLE.

Cirsium acaule Scop. Gotham, Notts, August 1929.—R. BULLEY.

Centaurea Jacea L., sub-sp. *angustifolia* Gugl. [Ref. No. 3513.] Malden, Surrey.—C. E. BRITTON.

Centaurea Jacea L., sub-sp. *jungens* Gugl. [Ref. No. 3514.] No locality.—C. E. BRITTON.

Hieracium Inuloides Tausch, sub-sp. *strictum* Fries, forma *angustifolia* Dahlstedt (fide Hugo Dahlstedt, who saw James Sinclair's two dried specimens of his Ref. No. 596, at Stockholm, Sweden, on 20th February 1929).—Ref. No. 596, grassy cliffs at seashore, north-east side of Aith Hope, South Walls, Hoy, Orkney, 9th August 1928, James Sinclair. Native. Common. Plants in full flower. A new record for this form for H. C. Watson's county No. 111 Orkney, discovered by James Sinclair, junior, aged fourteen years, residing at the Bu, Hoy, Orkney, on 9th August 1928. I have never found the sub-species *strictum* Fries in Orkney, but I have specimens of the variety *amplidentatum* F. J. Hanbury (fide F. J. Hanbury), collected at Pegal Bay, Waas, Hoy, Orkney, on 14th August 1880, by Miss Isobel B. Irvine Fortescue. See *Ann. Scot. Nat. Hist.*, No. 15, p. 178 (July 1895); and Reprint, pp. 6-7 (1st January 1925).—H. H. JOHNSTON.

Hieracium Pulmonarioides Vill. Mells, N. Somerset. See *Rep. B.E.C.*, 120, 1929.—G. C. DRUCE. "Correctly named. The radical leaves are furnished with many curled, woolly-looking hairs that are scabrid or furnished with minute denticles. Amongst these are shorter, glandular hairs. The cauline leaves are sessile and cordate at the base, but not amplexicaul, though belonging to the same small group as *H. amplexicaule.* The ligules are ciliate on the apical teeth. A doubtful native."—FRASER.

Hieracium claropurpureum N. P. South Molton, N. Devon.—G. C. DRUCE. "Seems to me correct for the broad-leaved Hawkweed of this group, but the specimens are so reduced in size that only one cauline leaf is represented by a bract-like organ. The stolons of my two pieces are correct. I used to be delighted with it on the way to school in the sixties of last century by flower stems 12-15 in. high."—FRASER.

Hieracium obliquum Jord. [Ref. No. 2426.] Gravel bank, Abberton, N. Essex, August 8, 1929. This seems to be identical with a plant [Ref. No. 331] collected here in 1910 and named *H. boreale*, var. *Hervieri* by Mr Cryer.—G. C. BROWN.

Hieracium chlorophyllum Jord. [Ref. No. 3500.] Westcott, Surrey, June 1929.—C. E. BRITTON.

Hieracium Lachenalii Gmel. [Ref. No. 2427.] Gravel bank, Abberton, N. Essex, August 1929.—G. C. BROWN.

Lactuca Saligna L. Bank of tidal Avon below Bristol, persistent, August 1929.—J. W. WHITE.

Lobelia urens L. Hinton, Hants.—J. W. LONG.

Campanula patula L. Blenbury, July 1929. From its only Berkshire locality.—G. C. DRUCE.

Erica cinerea L., var. *Rendlei* L. B. Hall. Parkstone, Dorset, August 5, 1928. See *Journ. Bot.*, 1909, p. 437; 1928, p. 272, and Druce's "British Plant List," 446/1 e. All the specimens labelled Parkstone, now and previously distributed, were gathered from the same bush [Ref. No. 703] at different times. Each year since it was first discovered this plant has borne only the heads of crimson bracts in place of flowers, as also have the several other plants of this form which I have had under observation in Dorset during the last few years—L. B. HALL.

Limonium lychnidifolium O. Kuntze. Origin—Plémont rocks, Jersey; cultivated in garden, Highlands College, July 31, 1929. The plant growing wild on Plémont rocks is not quite so tall and strong as the specimens grown in our garden and distributed here. I found at Ronez, about two miles from Plémont, a plant a little different; it is much smaller, its leaves are more bluish, and its panicle is congested. I cultivated it also in our garden, but I have not a sufficient number of specimens to distribute. Mr C. E. Salmon thinks the Ronez plant is nearer his variety *corymbosum* than the Plémont plant.—L. ARSENE.

Armeria maritima Willd. Maritime rocks, La Moye, Jersey, July 1, 1928.—L. ARSENE.

Armeria maritima Willd, var.? Maritime rocks, La Moye, Jersey, July 1, 1928. This stout form, with leaves longer and broader, is less common in Jersey than the type. It is very likely the plant that Corbière puts under the variety *pubescens* in his "Flore de Normandie."—L. ARSENE.

Fraxinus excelsior L. Polperro, East Cornwall, October 1, 1929. (a) Narrow-leaved; (b) broad-leaved. The two young trees from which these leaves were taken grew side by side and were noticeably different in colour:—(a) With narrow lanceolate to ovate-lanceolate leaflets, being dark green and the leaves opaque, and (b) with broader, ovate, glossy leaflets, decidedly yellowish-green. Ash trees generally in this neighbourhood seem to be either dark green or yellowish-green.—F. RILSTONE. "It would be interesting to know whether these two trees differ in their flowers. I have trees showing much more extreme difference in the size and breadth of the leaflets. Of these the one with smaller, very narrow leaflets bears flowers with fertile carpels, but with stamens producing very little pollen and that apparently imperfect. The tree with much larger and broader leaflets bears flowers which are almost all staminate, with only an occasional carpellary flower at the top of the cyme. There may be some connection between floral condition and form of leaf."—DRABBLE.

Gentiana Amarella L. Dry moorlands above Minera Lime Works, near Wrexham, Denbigh, September 1929.—C. WATERFALL. "Yes; typical."—DRUCE.

Myosotis cespitosa Schultz. Land Yeo Reservoir, Blagdon, N. Somerset, July 15, 1929.—I. M. ROPER. "This plant is peculiar in that the hairs on the surfaces of the lower leaves have swollen bulbous bases such as one finds in *Lycopsis* and in some species of *Symphytum*. I have no other sheet of *Myosotis* which shows this peculiarity, but Miss Roper tells me she has a similar plant from another locality in Somerset. Cornish *cespitosa* differs somewhat from this Blagdon plant, notably in the long, strap-shaped leaves of the former, but the name seems to be used in an aggregate sense to cover all our wet ground forms with adpressed stem hairs and small flowers."—RILSTONE.

Solanum ochroleucum Bast., var. *luteo-virescens* Gmel. Waste ground at Highlands, Jersey, November 15, 1929. Seems to be very rare in Jersey, but is easily overlooked or mistaken for the type, unless examined closely at the end of the season.—L. ARSENE.

Solanum miniatum Bernh. Waste ground at St Helier's, Jersey, November 15, 1929. Much rarer than the type.—L. ARSENE.

Solanum chenopodioides Lam.? Gathered on an alien plant hunt on "foreign" territory, our guide being Mr Edgar A. Rees of Penzance, to whom we express our most cordial thanks. Some dozens of plants formed a pair-sized patch, growing in and around a fowl-run in a grassy hollow among the sand-hills. Probably introduced with chicken food. The plant agrees fairly well with the above, but appears to be a perennial as it has persisted in the spot for several years, though setting very few fruits which show no signs of ripening.—R. MELVILLE and R. L. SMITH.

Veronica Anagallis-aquatica L. agg., var. *divaricata* (Krösche). Wolvercote, Oxon, April 1929.—G. C. DRUCE. "According to Mr C. E. Britton's paper in the B.E.C. Report for 1927, Krösche made his *divaricata* a sub-species of the restricted *V. Anagallis* L., and Mr Britton describes it as having pinkish flowers. I am inclined to wonder whether, at any rate in England, all pink-flowered plants ought not to go to forms of *V. aquatica* Bernh., and all blue-flowered ones to *V. Anagallis* L. Certainly all plants I have gathered, or seen fresh, appeared to suggest this. Moreover, it has seemed to me that the young barren leaf-shoots of these plants are of considerable assistance in determination, and it seems to be probable that the barren shoots of *Anagallis* always have more or less petioled leaves, whereas those of *aquatica* always have sessile, more or less strap-shaped, leaves. It would be a great help, therefore, in the study of these rather difficult plants if (a) some note as to the colour of the flowers were always made, and (b) only complete plants were collected. The latter point means, of course, that of some of the bigger and coarser forms, each specimen takes two or three sheets to mount. This is, obviously, cumbersome, yet it does not appear possible to study the plants properly in any other way. My sheet of the present gathering contains only the top of one (apparently largish) plant. The pedicels are much thicker than is usual in *V. Anagallis*, and if, as I suppose from the general look of the specimen, the flowers were pink, I should be inclined to call this a form of *V. aquatica* Bernh., though not the typical form. I may perhaps add my impression that when hybrids occur between the two species they are barren and blue-flowered. These suggestions are all made somewhat indefinitely because it seems to me that the forms of these Veronicas require much more study before definite statements can be made about them."—WILLIAMS.

Veronica peregrina L. Garden weed, Ledbury, Hereford, June 9, 1929.—S. H. BICKHAM.

Veronica Tournefortii Gmel., var. *Corrensiana* (Lehm.). Henley on Thames, August 1929.—G. C. DRUCE.

Euphrasia Kerneri Wettst. [Ref. No. A.14.] Chalky slope of Winter Downs, nearest to Bourne End, near Cookham, on the Berkshire side of the River Thames, August 25, 1929. In Surrey this species is often nibbled by rabbits and a good series is therefore difficult to obtain.—J. E. Lousley. "Correctly named."—Lumb.

Euphrasia Rostkoviana (auct. brit.). [Ref. No. 798.] Longmoor, Morayshire, September 1929, coll. K. D. Little. I have been doubtful, as the naming of Euphrasias is being revised, whether to put a name on this, or to leave it. It is I believe, what British authors have been calling *E. Rostkoviana*.—J. E. Little. "Mixed; two plants and three scraps being *Rostkoviana* and three plants and one scrap being *brevipila*."—Lumb.

Euphrasia —— ? Bwlch, Brecknockshire, September 16, 1929.—C. Waterfall. "Quite insufficient for determination."—Drabble.

Euphrasia —— ?. Head of Hatchmere, Delamere Forest, Cheshire, September 7, 1929.—C. Waterfall. "My sheet has one poor specimen of *E. nemorosa*, var. *ciliata*."—Drabble.

Rhinanthus Crista-Galli L. [Ref. No. 3531.] Woldingham, Surrey. —C. E. Britton.

×*Mentha cordifolia* (Opiz) Fraser, var. *dourensis* Fraser. Cult. Kew from The Dour, New Aberdour, N. Aberdeen, August 13, 1928, and August 19, 1929. This variety of the hybrid *M. rotundifolia* × *spicata* was known to Smith in 1798 or previously, as his herbarium shows, but he had no wild locality for it. He regarded it as a variety of *M. spicata*. It differs from the type in its much longer, more slender spikes, purple (instead of pink) flowers, more pointed leaves with sharper serration, etc.—J. Fraser.

×*Mentha villoso-nervata* (Opiz) Fraser. Cult. Kew from Friday Street, Surrey, August 24 and September 13, 1929. Parentage *M. longifolia* × *spicata*. Opiz described it as a species, and I have adopted his name for it. When seen growing wild it strongly resembles *M. spicata*, but when cultivated the leaves become broader. Its special feature is the villous hairs on the principal nerves, stems and branches. The pedicels are covered with short, pin-headed hairs, otherwise they and the calyx tube are glabrous. I have only seen it from three stations —two in Surrey and one in Dorset, where I collected it in September last.—J. Fraser.

Mentha viridis L. [Ref. No. A.33.] By Paper Mills west of Esher, Surrey, August 14, 1929. Name agreed to by Mr Fraser.—J. E. Lousley.

Mentha aquatica L., var. *Lobeliana* Becker. [Ref. No. A.27.] Outwood Common, Surrey, September 9, 1929. A very striking plant when growing. Named for me by Mr Fraser. Dr Druce gives Briquet as the author in his List.—J. E. Lousley. "I agree. My sheet is one of the largest size for the variety. The leaves are lanceolate, and the stem is branched with many heads. It is true that Briquet put his name to the variety, but that was probably due to a slip of memory, as he gave Becker the credit in his 'Flore des Alpes Maritimes.' "—FRASER.

Mentha aquatica L., var. *Weiheana* H. Braun. [Ref. No. A.30.] Thameside, by Molesey Hurst, Surrey, August 17, 1929. Compare with Ref. No. A.29. Dr Druce has the name as var. *Weiheana* (Opiz) Briq. in his List. Determined by Mr Fraser.—J. E. LOUSLEY. "A subglabrous variety, but my specimens are not quite typical. The leaves as well as the stems are often red, though this is not constant in the same colony."—FRASER.

Mentha aquatica L., var. *Weiheana* H. Braun. [Ref. No. A.29.] Thameside near Molesey Hurst, Surrey, August 17, 1929. Determined by Mr Fraser. This gathering as a whole shows more acute leaf apices than Ref. No. A.30, and is reddish—evidently a result of slightly drier habitat.—J. E. LOUSLEY.

×*Mentha verticillata* L., var. *ovalifolia* H. Braun. [Ref. No. A.26.] Earlswood Common, Surrey, September 8, 1929. I write the name as Mr Fraser determined the mint, but Dr Druce gives it in his List as × *verticillata* (L.), var. *ovalifolia* (Opiz) Briq.—J. E. LOUSLEY. "Yes, a small form."—FRASER.

×*Mentha verticillata* L., var. *ovalifolia* H. Braun. [Ref. No. A.34.] Hare Lane Green, Claygate, Surrey, August 31, 1929. Rather more hirsute, and branched lower than my Ref. No. A.26 from Earlswood—perhaps a result of shadier conditions. Mr Fraser determined this mint and writes the name as above.—J. E. LOUSLEY.

Mentha arvensis L., var. *densifoliata* Briq. [Ref. No. A.31.] In coppice wood above Southawke, Woldingham, Surrey, August 5, 1929. Named for me by Mr Fraser. The rich colouring of the flowers gives a beautiful contrast to the delicate green of the leaves.—J. E. LOUSLEY.

Mentha arvensis L., forma *hirtipes* Fraser. [Ref. No. A.32.] Banks of Aldenham Reservoir, Elstree, Herts, July 14, 1929. Named by Mr Fraser.—J. E. LOUSLEY.

Mentha Pulegium L. Skipwith, Yorks, August 1929.—G. C. DRUCE.

Thymus —— ? [Ref. No. 4.] Growing with heather, Ventongimps, West Cornwall, August 9, 1929.—F. RILSTONE.

Thymus Serpyllum L., agg. [Ref. No. 1.] Sand dunes, Perranporth, West Cornwall, August 1929.—F. RILSTONE.

Thymus —— ? [Ref. No. 2.] Edge of path, Mill Downs, Ventongimps, West Cornwall, August 9, 1929. Lower calyx teeth stouter than in No. 3, equalling upper teeth, leaves narrow, veins projecting below. —F. RILSTONE.

Thymus —— ? [Ref. No. 3.] Edge of Path, Mill Downs, Ventongimps, West Cornwall, August 9, 1929. Lower calyx teeth very slender, longer than upper teeth; leaves broad, veins projecting below.—F. RILSTONE.

Salvia Verbenaca L. Benson, Oxon, July 1929.—G. C. DRUCE.

Scutellaria Columnae All. Mells, Somerset.—G. C. DRUCE. See *Rep. B.E.C.*, 34, 1929.

Stachys palustris × *silvatica*. [Ref. No. 3542.] Chessington, Surrey, August 4, 1929. This has been so often distributed that I fear an apology is necessary. As, however, the specimens have dried remarkably well, perhaps they may be acceptable to members. The plants, when growing, exhibited an admirable admixture of the parental characters. The softly pubescent foliage, the stronger odour, and the dark flowers showed the presence of *S. silvatica*, whilst the influence of *S. palustris* is most apparent in the shape of the leaves.—C. E. BRITTON.

Galeopsis bifida Boenn. [Ref. No. 3541.] Carnelis Green, Herts, August 3, 1929.—C. E. BRITTON. "Very nice material, but should not the calyx teeth be longer than the tube of a rather small corolla in *bifida*?"—DRABBLE.

Galeopsis Ladanum L., var. Stow Wood, Oxon, September 1929.—G. C. DRUCE. "A common form in cornfields, coming rather under *G. angustifolia* Ehrh., and it also agrees with the French botanists' description of var. *campestris* (Timb.)."—C. E. BRITTON.

Lamium purpureum L., var. *foliis profundius crenatis*. [Ref. No. 770.] Market garden, Riddy Lane, Hitchin, Herts, May and June, 1929.—J. E. LITTLE. "A not uncommon form of *L. purpureum* scarcely worthy of being called a variety. The leaves are not so deeply and irregularly crenate as in *L. hybridum*, var. *decipiens*."—BRITTON.

Lamium hybridum Vill. Entomophilous state. [Ref. No. 769.] Market garden, Riddy Lane, Hitchin, Herts, May and June 1929.—J. E. LITTLE. "This is the var. *dissectum* Mutel."—BRITTON

Teucrium Scorodonia L., nov. var. *acrotomum* L. B. Hall. Origin, Exmoor, Somerset, 1922; grown in garden, Parkstone, Dorset, gathered August 1, 1925. See *Journ. Bot.*, October 1928. I have now grown this variety in my garden for seven years, under various conditions, and it remains constant in the essential characters which distinguish it from type. The specimens I now send were grown in very light and poor sandy soil.—L. B. HALL.

Plantago Coronopus L. Dry sandy ground on Barrow Hills, near Bawtry, Notts, September 4, 1929.—A. WILSON.

Littorella uniflora Asch. Moor Green Reservoir, Notts, September 29, 1929.—R. BULLEY.

Amaranthus ascendens Loisel., var. *polygonoides* (Moq.) Thell. *A. acutilobus* Uline & Bray = *Euxolus emarginatus* Salzm. Casual, not naturalised, St Helier's, Jersey, September 21, 1929.—L. ARSENE.

Amaranthus speciosus Sims. Escaped from cultivation and rare, St Helier's, Jersey, August 11, 1929. Several species of *Amaranthus* have been found in Jersey in cultivated ground or waste places, but only *Amaranthus retroflexus* is thoroughly naturalised. The other species—*A. sylvestris*, *paniculatus*, *deflexus*, *albus*, *polygonoides*, and *speciosus* are found occasionally, but they do not seem to be well established anywhere in the Island.—L. ARSENE.

Chenopodium ficifolium Sm. [Ref. No. 829.] Seeds. Arable, near Parkhurst House, Black Down, W. Sussex, August 16, 1929.—J. E. LITTLE.

Chenopodium opulifolium Schrad., var. *mucronatum* Beck. [Ref. No. 3617.] Merton, Surrey.—C. E. BRITTON. "Labelled *opulifolium* only by Dr Aellen."—DRUCE.

Atriplex Babingtonii Woods. Rocky sea shores, Westmount, Jersey. —L. ARSENE. "Is not this the seaside form of *deltoides*?"—DRABBLE. "Correctly named. The small 3-lobed leaves pass right up into the inflorescence. It is a very variable plant, sometimes bright red. This one is grey and mealy."—FRASER. "More correctly *A. glabriuscula* Edmonst., but, if correctly named, it is not typical."—DRUCE.

Atriplex tatarica L. Cotgrave, Notts, August 26, 1929.—R. BULLEY. "No; it is *A. hastata*."—AELLEN and DRUCE.

Polygonum dumetorum L. Coppice, Newchurch, Isle of Wight.—J. W. LONG. "Quite correct. Being gather in October, the plant was ripening off making some of the long pedicelled, winged fruits to drop." —FRASER.

Polygonum mite × *Persicaria*. [Ref. No. 3566.] Mortlake, Surrey, August 24, 1929. Gathered in the company of C. E. Salmon, whose untimely death is a great blow to all his friends, and a greater loss to British Botany. I have not associated Mr Salmon's name with my own as collectors of this *Polygonum*, as I am sorry we were unable to agree as to the identity of the plant. I believe that Mr Salmon entertained the view that the plant was a form of *P. Persicaria*. However, a few weeks before his death he wrote, "if only the fruit were more elongated and narrow, then *mite* × *Persicaria* would satisfy me!" It is admitted that the plant distributed shows strongly the characters of *P. Persicaria*, but there are also features present which seem to indicate the influence of another species which can only be *P. mite*, I think. The reasons which actuate me in ascribing a hybrid origin are (1) the vigorous vegetative growth, all specimens distributed being taken from one plant, which also furnished other examples to both collectors and yet did not extirpate the plant; (2) the habit is intermediate between *P. Persicaria* and *P. mite*, the inflorescences are less stout than in the first, and approach the second in being more interrupted; (3) the cilia of the sheaths, both foliar and floral, are longer, coarser, and more numerous than in *P. Persicaria*, and are closer in character to those of *P. mite*. Other features presented by this plant, not necessarily indicative of a mixed origin, are the slightly glandular peduncles and perianth, characters presumably derived from *P. Persicaria*, which frequently shows a glandular perianth, in spite of what books say to the contrary; the well-formed fruits, in appearance similar to *P. Persicaria*, and not recalling those of *P. mite*. I am unable to agree with the view that the shape of the fruit is the deciding factor. In passing, it should be noted that hybrids in the Polygonaceae are not always sterile, and that some are prolifically fertile.—C. E. BRITTON.

Polygonum minus Huds. [Ref. No. 3595.] West End, Esher, Surrey, September 15, 1929.—C. E. BRITTON.

Polygonum Persicaria L., var. *elatum* G. & G., or near it. Dorchester. Oxon, July 1929.—G. C. DRUCE.

Polygonum lapathifolium L. [Ref. No. 3533.] Lower Morden, Surrey, July 1929. This is the form with most of the leaves arachnoid-felted, and it has received various indicative names. It is the *P. lapathifolium* L., var. *incanum* Koch, and it is also *P. lapathifolium* L., var. *tomentosum* (Schrank) of Beck. It agrees excellently with the representation of *P. tomentosum* Schrank in Reichb. Icon, t. 217. This plant is probably more than a mere form and seems to constitute a well-marked variety. The erect, little-branched stem and narrow leaves, tapering at each end, are other features.—C. E. BRITTON. "I agree. It has all of the characters of *P. lapathifolium*, but the bright pink flowers were at one time attributed to *P. nodosum* Pers. Mr Britton's specimens are more highly coloured than the majority of Surrey specimens."—FRASER. "Some important authors hold that this is not the *lapathifolium*, and choose *P. scabrum* Moench as used in my List."—DRUCE.

Polygonum polystachyum Wallich. In great abundance along the railway from Barnstaple to Lynton, and especially about Woody Bay, N. Devon, September 1929.—G. C. DRUCE.

Rumex obtusifolius L., var. *silvestris* (Wallr.). [Ref. No. 3539.] Wormley, Herts.—C. E. Britton. "Yes; so I should name it."—Drabble.

Rumex salicifolius Weinm. Railway embankment, Newport, Isle of Wight, October 1929.—J. W. Long. "Yes."—Druce.

Urtica pilulifera L. Nottingham, August 1929, ex hort.—R. Bulley. "Grown from seed which I supplied to Mr Bulley in 1928. Among the plants of my own raising was a fair quantity of the variety *Dodartii* L."—Bemrose.

Rumex crispus L., var. *trigranulatus* Syme. Aldeburgh, E. Suffolk, September 27, 1928, coll. K. D. Little. There appear to be three forms of fruiting segments in *R. crispus*: (1) *nudivalvis* Meisner, in which no tubercles are developed; (2) the type, with one tubercle only; (3) *trigranulatus* Syme, with three tubercles. These fruits appear nearest to the last, although one tubercle is somewhat larger than the other two.—J. E. Little.

Euphorbia virgata W. & K. [Ref. No. 789.] Sacombe Pound, Herts, June, August, and September 1929.—E. F. D. Bloom and J. E. Little.

Euphorbia exigua L. Barley field, Atwick, E. Yorks, September 6, 1929.—R. Bulley.

Salix pentandra L. Cult. Kew from Esher Common, Surrey, one lot, June 7, 1928, the other with catkins and leaves separate, September 24, 1928 (leaves), and May 25, 1929 (catkins). The leaves of the second lot were injured by frost early in May, and failed. *S. pentandra* is not native in Surrey, but the above station for it was recorded by H. C. Watson in Brewer's "Flora of Surrey" (1863). [Ref. No. 676, as it precedes the name on the labels.]—J. Fraser.

Salix alba × *fragilis* (*viridis* Fries). Near Effingham, Surrey, May 12 and September 22, 1929. The catkins are poor as the tree had been pollarded a few years ago and was not flowering freely. The ♂ form is very scarce in Surrey. The leaves are not silky like *S. alba*, but they have got the short and wide form of that species, the silvery undersurface of *S. fragilis*, and the serratures are intermediate in depth between the two species. [Ref. No. 722, as it precedes the name on the labels.]—J. Fraser.

Salix cinerea × *viminalis*, f. *ferruginea* (G. And.). Tilburstow Hill, Surrey, catkins April 14; leaves July 7, 1929. [Ref. No. 495, as written before the name on the labels.] The features of this form are the thin, short pubescence, which would have been thinner if gathered in September, and the narrow leaves that become rusty beneath when gathered late.—J. Fraser.

Salix cinerea L. [Ref. No. A.73.] By pond near Warlingham Church, Surrey. Leaves, July 1, 1928; catkins, April 1928. Although fairly common in Surrey generally, Mr Beadell knows only this one tree in the Warlingham and Chelsham district. As the field is in the hands of the builders I send these specimens, named for me by Mr Fraser, in anticipation of the destruction of the tree.—J. E. LOUSLEY.

Populus canescens Sm. Kidlington, Oxon, July 1929.—G. C. DRUCE.

Habenaria conopsea Benth. Pant-y-Mwyn, Flint, July 1929.—C. WATERFALL.

Scilla autumnalis L. Dry places, hillsides and cliffs, St Ouen's Bay, Jersey, August 8, 1929.—L. ARSENE.

Juncus maritimus Lam., var. *congestus* L. B. Hall. Near Poole Harbour, Dorset, August 17, 1928. See *Journ. Bot.*, December 1928. The original five large clumps, which I first found in 1927, have this year, 1929, again produced only heads of the compacted form as in the two preceding years. An extended search among the large colonies of the type which occur in the district has hitherto failed to reveal any other plants of this form.—L. B. HALL. "The older name is *J. spinosus* Forsk., var. *congestus* (Hall) Druce."—DRUCE.

Juncus bulbosus L. [Ref. No. 3606.] Wisley Common, Surrey, September 1929.—C. E. BRITTON.

Potamogeton alpinus Balb., var. *Palmeri* Druce. Odiham, Hants, September 1929. Discovered many years ago by Miss Palmer and myself. It has something of the aspect of *praelongus*, and for sometime I thought its peculiarities were due to a cross and named it ? ×*Palmeri*, but Mr Bennett corrected that opinion and thought it was the type. Having seen a great gathering of it, in almost the last letter I had from him he suggested that I should give it the varietal name.—G. C. DRUCE.

Potamogeton decipiens Nolte. Canal near Market Harborough, Leicester, in great quantity, September 1929.—G. C. DRUCE.

Potamogeton panormitanus Biv.-Bern. Cattle pond, Blagdon, N. Somerset, July 15, 1929.—I. M. ROPER.

Cyperus longus L. Damp meadows and fields, marshes and borders of streams and ponds, St Ouen's Bay, Jersey, August 8, 1929.—L. ARSENE.

Cyperus longus L. Discovered in a marsh at Ascot, Berks, by the Rev. D. M. Heath in 1929. New to Berkshire, but I think it has been introduced since I worked that area in the early nineties.—G. C. DRUCE.

Eleocharis acicularis R. Br. [Ref. No. 3601.] West End, Esher, Surrey, September 1929.—C. E. BRITTON.

Scirpus —— ? Between Freshfield and Arnsdale, S. Lancs, September 1929.—C. WATERFALL. "My sheet has one small specimen of depauperate *S. maritimus* L., var. *conglobatus* Gray (*compactus* Koch)."—DRABBLE.

Scirpus filiformis Savi. Colan, near Newquay, W. Cornwall, July 1913.—C. C. VIGURS.

Carex riparia Curtis, ? forma *gracilescens* Hartm. Marsh ditch below Tickenham Hill, North Somerset, June 27, 1929. A slender plant with narrow leaves and lower fertile spikes longly peduncled and pendent. In those characters it approaches the var. *gracilescens* Hartm.; and where the glumes of female spikes are prolonged into aristate beaks, the sub-var. *aristata* Rouy seems to be suggested. Since writing the above I have learned that in 1915 Miss Roper gathered the same form at Tickenham, probably from the same ditch. In the B.E.C. Report for that year her specimens were commented on by Messrs Bennett and Marshall without being definitely determined. But in the "Kew Bulletin," No. 4 (1920), the variety is fully discussed and the conclusion reached that Miss Roper's gathering, together with others from Cornwall and the Isle of Wight, should be ascribed to *Carex riparia* Curt., var. *gracilis* Coss. & Germ., as the earliest name applicable. With that name, apparently, *gracilescens* is synonymous and so the labelling of these sheets may stand.—J. W. WHITE. "The chief differences between this and the type are the slender stems, smooth on all angles, as far as I can see or feel; the narrow, cylindrical spikes, and the pale brown colour of their scales. Would not var. *gracilis* Coss. & Germ. fit it?"—FRASER.

Carex Oederi Retz., var. *oedocarpa* And. [Ref. No. 3519.] Epsom Common, Surrey, July 5, 1929.—C. E. BRITTON.

Carex Goodenowii Gay, forma. Bog by Sarn Helen, near Pont-y-Pant, Carnarvonshire, June 1929. Roots creeping.—A. WILSON. "Probably under var. *recta*."—DRUCE.

Carex —— ? Roadside bank, Porchester and Fareham, S. Hants.—P. M. HALL. "It is *Carex divulsa* Stokes. The edge of the perigynium, and its long, bifid beak is scabrid. The specimen I have received is abnormal in having the lowest bract of the inflorescence not much larger than the next one."—FRASER.

Carex divulsa Stokes. [Ref. No. A.67.] Headley Lane, near Dorking, Surrey. All gathered from one large clump.—J. E. LOUSLEY.

Carex Pairaei F. Schultz. In old grass, side of path, Coombe, Liskeard, E. Cornwall, July 1929.—F. RILSTONE. "A very good example of this."—BRITTON.

Carex Pairaei F. Schultz. St Ouen's Bay, Jersey, June 1929.—L. ARSENE. "I agree. The spikes are short, somewhat interrupted, more slender than those of *C. contigua*, and the perigynia are all ascending and scabrous on the two edges."—FRASER.

Carex vulpina L., var. *nemorosa* Lej. New Mickle, Trafford, Cheshire, July 1929.—C. WATERFALL. "No; this must go under type."—DRUCE.

×*Carex axillaris* Good. (*C. remota* L. × *C. vulpina* L.). A large clump, growing with both parents, in a wet hedgebank between Keyhaven and Lymington, S. Hampshire, August 3, 1929. Most of the spikelets seem attacked by some disease which was also affecting *vulpina* in this locality.—I. A. WILLIAMS.

Panicum Ischaemum Schreb. (=*P. glabrum* Gaud.). Arable land, Pyrford, Surrey, September 1918.—Miss M. COBBE.

Spartina alterniflora Lois. Southampton Water, S. Hants, September 1928.—J. W. LONG.

Anthoxanthum aristatum Boiss. Burton-on-Trent, Staffs, July 1929. —G. C. DRUCE.

Phleum intermedium Jord. Nuneham, Oxon, July 1929.—G. C. DRUCE.

Alopecurus aequalis Sobol. Byfield Reservoir, Northants, on the mud margin, September 1929. It formed a beautiful sight from the profusion of the orange anthers.—G. C. DRUCE.

Alopecurus aequalis Sobol. Pond, near Guildford, Surrey, August 23, 1923.—R. J. BURDON. Sent as *A. fulvus*.

Polypogon monspeliense Desf. Weston Park, Warwick, August 1929. —H. J. RIDDELSDELL.

Festuca heterophylla Lam. Abundant at Chiselhampton, Oxon, July 1929.—G. C. DRUCE.

Festuca elatior L. [Ref. No. A.64.] Banks of River Thames between Richmond and Teddington, Surrey, September 7, 1929.—J. E. LOUSLEY.

Bromus hordeaceus L., depauperate form. Wall-top, Polperro, E. Cornwall, June 1929.—F. Rilstone. "Certainly; but more depauperate forms occur."—WILLIAMS.

Bromus pratensis Ehrh. = *B. commutatus* Schrad. Chertsey Mead, Surrey, June 15, 1929. There seems so often to be confusion between various species of *Bromus* that I venture to send these specimens. Some of them are already beginning to show the dark red colour which is typical of *B. pratensis* (=*commutatus*) as it gets old and sometimes leads to its confusion with *B. arvensis*. *B. pratensis* is a very common grass in riverside meadows both at Chertsey and across the Thames in Middlesex.—I. A. WILLIAMS.

Bromus britannicus I. A. W. In a dry sandy pasture, Churt, Surrey, June 23, 1929. This grass, which I described in the *Journal of Botany*, March 1929, seems to be frequent in sandy fields (both arable and thin pasture) in S.W. Surrey. It will probably prove to have a very wide range in Britain as specimens of it are to be found in most large British herbaria. I saw several gatherings in Dr Druce's herbarium, for example. Not all plants of this grass are so small as those I now send, but these Churt specimens are quite typical, and (mostly) quite ripe enough for certain determination. The character of the inner pale being shorter than the caryopsis is, however, easier to see in specimens which are dropping, *i.e.*, two or three weeks older than these. —I. A. WILLIAMS.

Bromus britannicus I. A. W. Riever, Berks, June 1929.—G. C. DRUCE. "Grasses of this genus are extremely deceptive in appearance when young, though after the fruit has formed they appear perfectly distinct. My sheet of this gathering contains five plants. I believe that four of them are *britannicus*, with the flowers just opening, but no fruit formed. The fifth is not *britannicus*, but, apparently, a glabrous form of *B. hordeaceus*, but in such an early stage of development (flowers not fully formed, *e.g.*, pales not yet grown to their full size) as to be not readily recognisable. I have no real doubt that four of the specimens on my sheet are *britannicus*, but for the present I do not like to be positive about gatherings which are without well formed fruit."—WILLIAMS.

Agropyron repens L., var. *dumetorum* (Hoffm.) S. F. Gray. Hythe Quay, Colchester, August 9, 1929.—G. C. BROWN. "The glumes and pales are very shortly awned, so it must be called var. *dumetorum*. There are certainly three forms of awning in *repens*:—(a) Awn absent (*obtusum* Syme); (b) awn short (*dumetorum* (Hoffm.) S. F. Gray); (c) awn very long (*Leersianum* S. F. Gray). These seem to be well marked varieties but there is considerable range of length of awn in (b) and (c)." —DRABBLE.

Agropyron pungens Roem. & Schultes, forma. [Ref. No. 2428.] Wharf, Langenhoe Marshes, N. Essex, August 8, 1929. Extensively creeping in heaps of sand dumped from barges. Plants all slender.— G. C. BROWN

Hordeum nodosum L. Fields by the River Conway, near Tay-y-Bont, Carnarvonshire, July 17, 1929. Very abundant.—A. WILSON.

Equisetum variegatum (Schleich.) Weber. Weston-super-Mare, N. Somerset, July 1929.—G. C. DRUCE.

Equisetum occidentale (Hy) Coste. Shere, Surrey.—G. C. DRUCE. See *Rep. B.E.C.*, 42, 1929.

Isoetes echinospora Durieu. Near Studland, Dorset, September 6, 1928. See *Journ. Bot.*, 272, 1928. Since this plant was discovered in this locality it has very rapidly increased in numbers, and this year (1929) is very abundant. I therefore have no hesitation in sending some specimens. *I. lacustris* L. has been reported from this locality, but I have examined a large number of the plants, all of which, both in the tubercles on the macrospores and in the habit of growth, were good examples of *echinospora*.—L. B. HALL.

Azolla Filiculoides Lam. Wolvercote, Oxon, September 1929.—G. C. DRUCE. "Small plants."—ED.

Nitella translucens Agardh. [Ref. No. A.11.] Pond on Burghfield Common, Berks, September 9, 1929. Unfortunately this pond has now been thoroughly cleaned out so possibly the plant will be eradicated.—J. E. LOUSLEY.

Plants received from Prof. S. F. Beattie, Lowell Textile Institute, Lowell, Mass., U.S.A.:—*Solidago nemoralis*, *Pycnanthemum muticum*, *Lycopodium lucidulum*, *Linnaea borealis* var. *Americana* (Forbes) Rehder, *Viburnum cassinoidea*, *Verbena urticaefolia*, *Viola papilionacea*, *Pollygonum acre* var. *leptostachyon*, *P. Coccineum* var. *terrestre*, *Sisyrhinchium gramineum*, *Eriocaulon septangulare*, *Viola fimbriatula*, *Trientalis borealis*, *Euphorbia maculata*, *Panax trifolium*, *Viola pedata*, *V. blanda*, *Solidago Cutleri*.

LIST OF SEEDS RECEIVED.

From Mr Little:—*Agrimonia odorata*, 20; *Chenopodium ficifolium*, 12; *Rumex crispus*, var. *trigranulatus*, 12.

From Mr Bickham:—*Cucubalus baccifer*, 30; *Cotoneaster integerrima*, 22; *Vicia Orobus*, 25.

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INTERIM REPORT, NOVEMBER 1st, 1929.

844/8 EQUISETUM OCCIDENTALE (Hy.) Coste in Surrey. In 1912, when staying with Lady Victoria Russell at Shere, I found growing out of the gravel in a newly-made path an EQUISETUM, which by section and characters I referred to HYEMALE. I thought that this was native, and that it had been on the place before the house was built. Recently Lady Davy, who went to see it, doubted if it were identical with the HYEMALE of Weston-super-Mare, so with her I went over to see it. After these seventeen years the plant now grows not only on the path, but has spread much in the garden, and it occurs in the adjoining field. Examination of it showed it is the E. HYEMALE var. OCCIDENTALE which the Abbe Hy showed was a common form of HYEMALE in Western France. Rouy and Foucaud (Fl. Fr. xiv, 503) treat it as var. b. of HYEMALE, but Coste in Fl. de France makes it a distinct species, which occurs in France 'plutot Occidentale et centrale.' A full account will be given in the next Report.

561/11 THYMUS BRITANNICUS × GLABER — CHAMAEDRYS Blackland, Wilts, found by me with the Marchioness of Lansdowne in July last, and on Selsey Common, Gloucestershire, in the same month with Sir Roger Curtis. It is a new hybrid named by Dr. Ronniger.

572/4 SCUTELLARIA COLUMNAE All. Wooded valley near Mells, N. Somerset. About four specimens were found by the Rt. Hon. H. Baker in July last, and on visiting the spot with him in July we found it also much higher up the hill-side in great quantity.

418/187 HIERACIUM PULMONARIOIDES Vill. This occurs in immense quantity on many walls, houses and bridges at Mells, N. Somerset. It is probably the H. AMPLEXICAULE of the Rev. E. S. Marshall.

It is hoped to have the Flora of Northamptonshire in the next Supplement.

G. CLARIDGE DRUCE.

THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1930

(WITH BALANCE-SHEET FOR 1929),

BY THE

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G. C. DRUCE, D.Sc., LL.D., F.R.S.,

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VICE-PRES. BRITISH ASSOCIATION.

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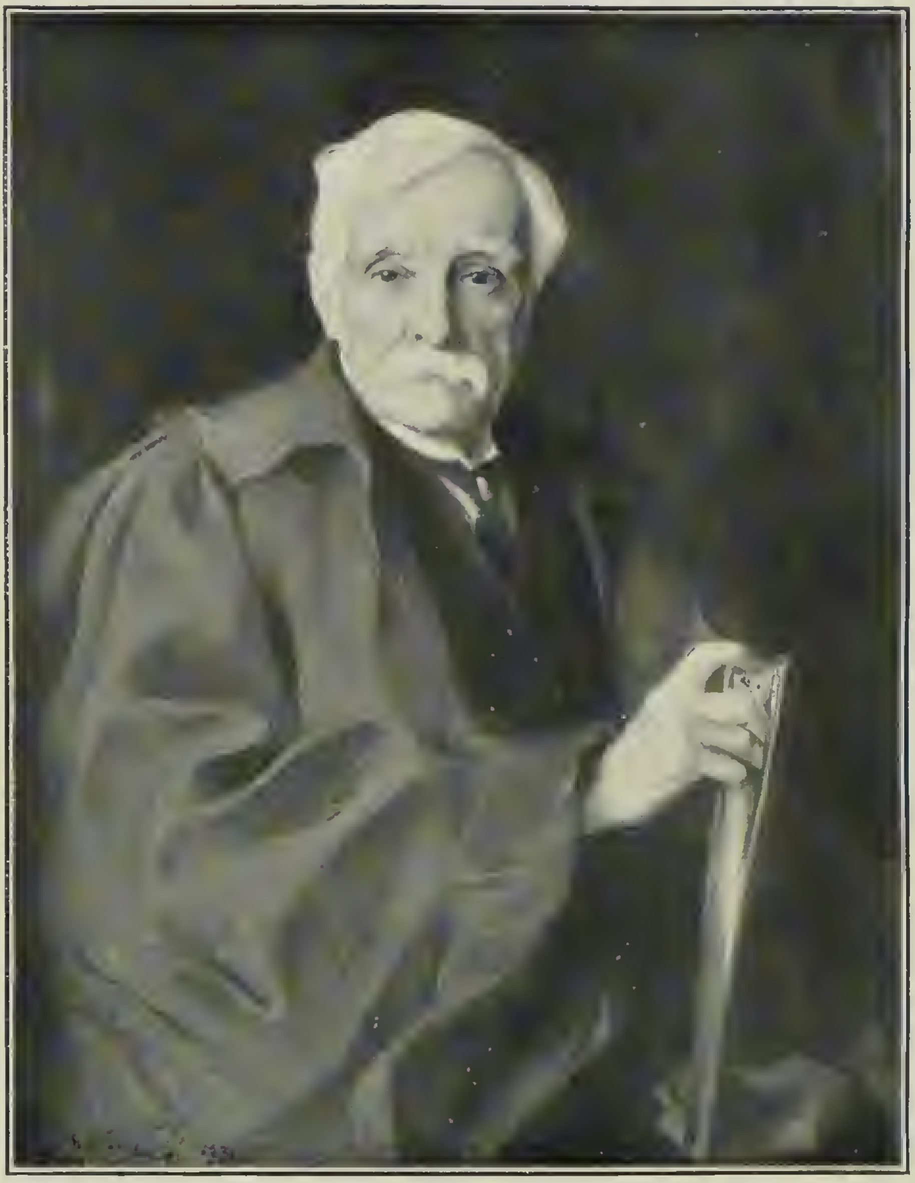

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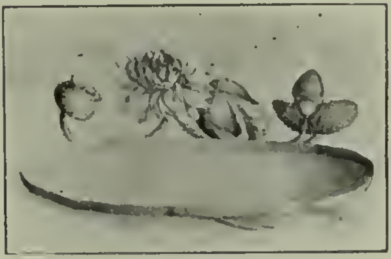

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BY THE

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(N.H.)
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Examined and found correct.—F. A. Bellamy, F.R.A.S., 6th January 1931.

The year 1930 brought us a sad bereavement in the death of our Patroness, H.R.H. the Princess Royal, Duchess of Fife. Sir M. Abbot-

Anderson has drawn up the following short sketch of Her Royal Highness. She was a great lover of wild flowers, and made many delightful paintings of them.

H.R.H. THE PRINCESS ROYAL, DUCHESS OF FIFE.

We mourn the loss of our Patroness, H.R.H. The Princess Royal, which is shared by all, but especially by those who were fortunate enough to call her " Friend."

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She was blessed with a keen sense of humour and even of the ridiculous, but her generous nature invariably compelled her to gloss over any eccentricities of those of the many people that she, of necessity, was brought into contact with who unintentionally transgressed the recognised code of etiquette.

Such was her retiring modesty that few people except her intimate friends were aware of her artistic qualities, but her colour drawings of flowers were exquisite. It was during her stay at Gibraltar that she painted a great many of the wild flora of " The Rock," in which she was deeply interested. To mention only one instance, her joy at seeing and painting a beautiful little blue variety of the Pimpernel has made an everlasting impression upon me.

I have vivid recollections of driving, years ago, with the Duke and H.R.H. The Duchess of Fife and their daughters from Algeciras to a neighbouring Spanish town, when my botanical eye compelled close observation of the roadside and I espied what were to me two unknown species of *Erica*. Carried away by my own enthusiasm, I impulsively " commanded " the driver to stop, collected my specimens and returned to the carriage, with profuse apologies upon my lips for my sudden lapse of good manners. Then, with delight in her eyes and her whole face alight with amusement, Her Royal Highness bade me bring the Heaths to her on our return home. To my intense satisfaction, though not surprise, she presented me next morning with perfect colour drawings of both species. This anecdote illustrates the kindly and sweetly simple nature of this most gracious lady, whose delicate state of health compelled her to live in comparative retirement, and whose loss we all so deeply deplore.

That she should have consented to act as Patroness to our Society must always remain in our memories as one of the very many kind and sympathetic acts which filled her daily life.

MAURICE ABBOT-ANDERSON.

We are glad to be able to say that H.R.H. Princess Mary, Countess of Harewood, has kindly consented to be our Patroness. In her young days at Windsor, Her Royal Highness was keenly interested in British Wild Flowers.

The year 1930 was, on the whole, so far as weather was concerned, a pleasant one in the early months, but August was disastrously wet in Scotland and Northern England. The display of flowers in the blazing sunshine of June in Ireland is not likely to be forgotten. Among these, *Achillea Millefolium* was a mass of blossom, and there were sheets of *Trifolium repens*, *Silene*, *Helianthemum canum* in Co. Clare and *Orchis praetermissa*. In North Wales *Senecio spathulifolius* was unusually strong, as was *Silene maritima*. On the Chilterns *Habenaria Gymnadenia* was a great show, and in Oxon, Berks, and Gloster *Cerastium pumilum* was more frequent than usual. The Dandelions through the central and southern part of England were in magnificent flower.

The year was marked by an International Botanical Congress at Cambridge in August, and incidentally one of its members, Prof. M. L. Fernald, claims to have discovered *Eriophorum opacum* on Ben Eigh and *E. alpinum* Willd. in West Ross. At Kew he detected as a specimen labelled *Juncus tenuis*, the North American *J. Dudleyi*, which was gathered by Mr C. E. Salmon and Mrs Wedgwood some years ago.

On June 6th a party of our Members visited Anglesey, Galway, and Co. Clare. The weather was magnificent—indeed, in Ireland they were crying out for water. We made our headquarters at Trearddur Bay, some of us being kindly entertained by Col. the Hon. and Lady Kathleen Stanley, who accompanied us on our expeditions. As we all know, Holyhead is a rich centre for plants and, indeed, includes the only English (Welsh) station for *Senecio spathulifolius*, which was in magnificent show. It appears quite a distinct species, perhaps even from its continental ally. *Juncus capitatus*, found elsewhere only in Cornwall and the Channel Isles, Lady Kathleen showed us growing in its classic spot. *Potamogeton lanceolatus* we were unable to find at Lhwygy, but our time was short, and it was late in the day and the stream was very shallow. Our party included Lady Alethea Buxton, Hon. Mrs Guy and Miss Baring, Miss D. Cator, Miss D. Meynell, Miss Cuthbert, Rev., the Hon. Mrs and Miss Campbell, Miss Heywood-Lonsdale, the Hon. Sir George Talbot, Sir Roger Curtis, Bart., Lord Henley, the Rt. Hon. H. T. Baker, Miss Armitstead and Mr Chapple.

Round Trearddur Bay and on Holyhead Mountain there was a delightful show of plants. The sunshine induced a profuse flowering of *Helianthemum Breweri*, which sheds its petals about mid-day. This rare plant still holds its own. It was named after Samuel Brewer, a correspondent of Ray and Dillenius. It was considered by Planchon to be a distinct species. Its bracts are sometimes absent, but, even then, its leaf characters seem distinct from those of *guttatum*. Good *Orchis praetermissa* and its hybrid with *O. maculata* were seen in several places. Lady Kathleen showed us *Ornithogalum umbellatum* near Penrhos. *Mibora* was practically over at Aberfraw, and at Coron *Elatine Hydropiper* was extremely rare. This year, however, *Potamogeton rutilus* was more frequent than usual, and near the lake I was glad to add *Caltha radicans* to Anglesey. Lady Alethea Buxton and Miss D. Meynell went out one evening and brought in a heath which for a moment I thought was *Daboecia* (*Boretta*). It was not that, so I went out with them to the mountain. There the heath had been burned the preceding year. A fresh growth had come up and much of it showed a peculiar modification of *Erica Tetralix*, var. *fissa*. The flowers were few in number, stalked and large flowered, the corolla being occasionally duplicated and split (pedunculata fissa). Miss Armitstead accompanied us to Red Wharf Bay and showed us a large field, not near houses, full of *Narcissus biflorus*. Near this place grew *Orobanche major* on Furze. In driving along the road from Menai to Beaumaris, my attention was called to a Hawkweed which was new to me. Subsequently I collected it, and Dr Zahn has identified it as *H. dentatum*, new to the British Isles. Our day on Snowdonia was unfortunate, for a hurricane of arctic coldness greeted us. It was literally dangerous to walk on the ridge, and the railway traffic was suspended for a time. Our party visited Clogwyn and collected many of the characteristic plants, but *Lloydia* was not in flower. It was gathered there ten days later in blossom. *Cochlearia micacea* was noticed in its old locality on Snowdon and a new British *Rubus*—*heteromorphus* at Llanberris. It was seen here many years ago. At Trearddur we found a new species of *Bursa pastoris* and *Pimpinella Saxifraga*, var. *ovata* Spr. The newly-named *Rubus laetus* was seen at Tyeroes; it is the Welsh *latifolius*. We had a delightful crossing to Dublin, and thence across Ireland to Galway. The salmon coming up the Galway river afforded an interesting sight.

We motored from Galway to Ballyvaghan, Co. Clare, on a divinely beautiful day. The route round Galway Bay to the Limestone area of the Bürren is a charming one. Here we saw *Helianthemum canum* in splendid blossom, and *Dryas octopetala* in enormous quantity. On the limestone pavement and in its interstices there were locally fine specimens of *Asplenium marinum* and *Adiantum Capillus-veneris*. The common form of the Herb Robert was *Geranium celticum*, which Ostenfeld and I found on the Phytogeographical visit. *Potentilla fruticosa* is still locally plentiful. Mr P. B. O'Kelly showed us *Orchis O'Kellyi*, which occurs in thousands and, with it, forms which have purplish rose-coloured corollas. Here, too, we saw *Orchis praetermissa* and its hybrids. *Sambucus Ebulus* grew near Ballyvaghan, as did *Potamogeton oblongus*, var. *lancifolius* and forma *parvifolius*, the latter found by P. B. O'Kelly. Where can there be a finer drive than that from Ballyvaghan to Glen Cahir, the scenery and the plants being splendid. The rare *Saxifraga Sternbergii* was in beautiful flower on tabular rocks near the sea, while the limestone cliffs had their terraces covered with *Galium pumilum*, *Asperula cynanchica*, *Polygala vulgaris* type and var. *grandiflora* and fine *Hieracium iricum*.

In Glen Cahir *Potamogeton perpusillus* grew plentifully in the river, with one of its parents, *P. coloratus*. *Equisetum*, as a form of *variegatum*, was frequent. A new form of *Cirsium pratense* was also seen in the meadows, where *Orchis praetermissa* and its hybrid, *Fuchsii*, grew luxuriously. *Arabis ciliata* was local, and *Habenaria intacta* grew in several places. *Gentiana verna* was in all its beauty, forming with *Dryas* a lovely combination. I was able to confirm my discovery of a new plant to Ireland—*Callitriche polymorpha*. The following day was devoted to visiting Roundstone, etc. We motored out to Clifden, seeing on our way *Boretta* in good flower. Between Clifden and Roundstone we got *Salix pentandra*, and did a fine bit of botanising on Urrisbeg, where *Erica mediterranea* was in flower. We went to Creag a More, but it was a little too early, as *Erica Mackayi* was only coming into flower. We also saw *Utricularia intermedia*, *Castalia alba*, var. *occidentalis*, and *Juniperus nana*. Dog's Bay afforded us some delightful hours, the plants found including *Arabis ciliata* and *hirsuta*, and the deep red var. of *Orchis pyramidalis*. The hedges of *Fuchsia Riccartoni* are gorgeous there. The colouring of the flowers, the brightness of the sea and sky were delightful.

We had time next day to visit Gentian Hill, only a few hundred feet in elevation, situated about three miles from Galway, which was blue with *Gentiana verna*. *Orchis maculata*, in a variety of forms, occurred, as also did *O. Fuchsii*, *O. praetermissa* and *O. purpurella*, so that the varieties and hybrids were especially interesting. Here, too, within a few feet of sea-level, grew *Habenaria intacta*, *Polygala vulgaris*, var. *grandiflora* Bab. (not *Babingtonii*), *Thymus britannicus* and *T. neglectus*. The hill is especially interesting since both basic and acid soils intermingle.

These few days' botanising afforded plants of exceptional interest, and it will long be remembered with pleasure.

In July, with Sir Roger Curtis, the Burton-on-Trent waste grounds, with the refuse from the granaries, was visited, and 140 alien species were noted. Most of these had been seen in previous years, but *Isatis tinctoria*, *Anacyclus dissimilis*, *Echium arenarium* and *Onopordon tauricum* were among the new records. *Hieracium praesigne*, another new Hawkweed to Britain, as well as *H. arrectarium*, were gathered in 1929 at Cuckoo Lane, Staffordshire.

A delightful visit to Cambridge was made in June, as the guest of Mr Gilbert-Carter, and a pleasant excursion with the eager young Cambridge botanists to Cherry Hinton and the Durnford Mashes was taken. In these a form, var. *planiflora*, of *O. incarnata*, with flat, not recurved, labellums, was noticed with the type and with forms of *O. praetermissa*.

In July we motored to Potterne to see the Marsden-Jones and Turrill experimental gardens, where there was a wonderful show of native plants and a mass of varieties of *Silene maritima*, *Centureas*, etc. In the village *Bursa patagonica* was obtained. We then went on by Mells and Wells, Cheddar, Weston, Clifden, where *Cerastium pumilum* was abundant, to Gloucester, Monmouth, Chepstow, Newport, and Cardiff. On the way we saw *Orchis hircina* and *Hieracium maculatum* var. (or sub-sp.) *pseudomaculatum* Zahn at Mells and Bath.

At Cardiff Docks and Barry, the aliens were not so rich as formerly, but we added to our List *Echium pustulatum* and *Andryala integrifolia*. *Scirpus Holoschoenus* has much increased.

We returned through Cheltenham, where *Ranunculus ophioglossifolius* was in larger quantities than usual. *Veronica aquatica*, var. *dasypoda*, grew with it. Miss Vachell had heard of the Flax Dodder at Bozeat in Northamptonshire, so we motored to one farm where *epilinum* was ruining the crops of Flax. It was an extraordinary sight.

In July also a party met at Bacres and explored the Dunstable Downs, where *Gentiana praecox*, *Orchis O'Kellyi*, *Habenaria viridis*, and the other local plants were seen. *Populus canadensis* is a conspicuous feature of the reservoirs near Tring.

A short visit to Denham and Iver was rewarded by seeing, quite naturalised, *Symphytum grandiflorum* at Gerrard's Cross, *Bursa viminalis* at Denham, and *Carthamus* at Langley.

Frensham and Puttenham were worked in July. Mr Clarke showed me in a hedge near Puttenham a fine bush of *Rosa multiflora*. *Orchis praetermissa* was very fine near Frensham. Mr Marks showed me *Ledum latifolium*, which he had found in considerable quantity near Normandy, bordering a large piece of water. It is now completely naturalised, though doubtless it was originally planted.

In August we motored up to Thirsk to be the guests of Mr and Mrs Foggitt. Our object was to examine the Tees-side about High Force, where one of the foreign members of the Botanical Congress thought he had found *Phippsia algida*. A minute search, however, showed that a very small form of *Agrostis pumila* had been mistaken for it. Here was *Solidago virgaurea*, var. *interrupta*. At Widdy Bank, *Juncus nodulosus* (*alpinus*) was in splendid quantity. I first found it there in 1903, then in 1909 when I showed it to Dr F. A. Lees, whom I had taken with me. In the intervening years I have seen it once or twice. Mrs Foggitt had given her Dr Lees' copy of the British Plant List. He had given this to Bennett, then it passed to Salmon, and from thence it found its way to a small bookstall, where Mrs Arber bought it. It is full of Lees' notes of additions. Amongst them was " *Juncus alpinus* Widdy Bank, Druce" (where I showed it him in 1909), " Mickle Fell, Yorks," the latter found subsequently by himself. We could not find it on the Yorkshire side of the Tees, but we did not try Mickle Fell last July. Before starting for Scotland I showed Mr Lindquist, who is studying this section, my specimens. He said that the Widdy Bank specimens of 1909 were among the best he had seen from Britain. I found it at Widdy Bank in 1903 and again in 1909 with my godson, Mr Leach, who remembers the incident distinctly, and also the showing of it to Dr Lees. Since that date I have shown other botanists the *Juncus* at Widdy Bank. Moreover, in our Plant List of 1928, N. Brit. is given for its distribution, not Scotia, which is used when the plant is confined to Scotland. This is followed also in such similar cases as *Bartsia alpina* and *Cerastium Cerastoides*. Dr Vachell's record of it is omitted as being too uncertain. Also in the Interim Report of last October I published an account of it. *Alchemilla pubescens*, *A. reniformis* and *A. curtiloba* were obtained, the last at Langdon Beck, a N.C.R. *Hieracium obliquum* grew by the Tees in both counties. We then motored to Winton, Westmorland, where Miss Mason showed us *Linum anglicum* and the alpine form of *Senecio integrifolius*. There, too, we got *Hieracium cumbriense* and *grandidens*, *Thymus neglectus*, *Bursa trevirorum*, and at Lune Head, Yorkshire, the true *Sedum acre*.

We were then the guests of Miss Hayward at Galashiels, and of Mr and Mrs Ritchie at St Boswells. Thence to Stirling, where, at Grangemouth, we re-discovered, after twenty years, the rare hybrid, *Potamogeton Bennettii*, and growing with it *P. crispus*, var. *serratus* (Huds.). Callander was next visited, where *Solidago canadensis* is quite naturalised, and at Loch Lubnaig we found, new to the county, *Alchemilla controversa*. Killin was next worked. *Calamagrostis borealis* still remained by the Tay. Near Tyndrum we found *Cochlearia micacea* in the river-bed. Loch na Lairige we seached on a glorious day and noted 54 alpines, including *Thymus Drucei*. Near Shiehallion we got *Gentiana septentrionalis* and *Thymus zetlandicus*.

From Kenmore we went over to Glen Lyon and Tummel, and thence to the Moor of Rannoch. By Kinloch Rannoch we saw splendid *Thymus Drucei* and *Pyrus intermedia*. From Rannoch we went to Killiecrankie looking vainly for *Lathyrus niger*, which seems to have died out. At Clunie, E. Perth, we saw some good Roses.

At Forfar, we saw my old friends, the Provost and Town Clerk. Then we were the guests of Mr and Mrs Corstorphine at Clova, but it was continuous rain for the four days that we were there. Our next journey was to Callander, thence through Edinburgh to Ayr. Here we found what is probably *Atriplex calotheca*, but it may be an adventive. It is quite unlike Bennett's *pseudo-calotheca*. From Ayr to Stranraer and the Mull of Galloway was a pleasant drive. Along the coast by Drummore is an abundance of the very distinct variety, *condensata*, of *Vicia sylvatica*, which I found there nearly 50 years ago. *Bursa laevigata* also occurred. We then went round Whithorn Point by the Glen Luce sands, which afforded *Radiola* and *Veronica officinalis*, var. In the beautiful drive from Newton Stewart through Kirkcudbrightshire to Crea Town, we noticed *Bursa laevigata* and *Limonium humile*. Our route then took us by Carlisle and Melmerby, where Mr Mason discovered *Myosotis brevifolia*, to Cronkley and Thirsk.

Mr Foggitt took us over a fine bit of country by Leyburn to Ottershaw, where we vainly sought for *Euphrasia salisburgensis*, reported from this area by Dr Arnold Lees. On another occasion we went towards Halifax, and, in the canal at Salter Hebble, we found still growing the North American *Potamogeton Nuttallii* C. & S. = *pennsylvanicus*. Here, too, was *P. panormitanus* and plenty of *Impatiens glandulifera*. A new variety of *Hedera Helix* was also noticed, as well as the var. *borealis*.

From Thirsk we drove back through Market Harborough, where we got *Potamogeton compressus*, var. *major*, and *Bursa laevigata*, to Oxford.

As the guest of the Hon. Mrs Guy Baring we spent part of September at Forbury in Berkshire. It is a delightful neighbourhood. At Hampstead Marshall, *Campanula Rapunculoides* is naturalised. On and about Wilbury Camp grew *Agrimonia odorata*, a *Euphrasia* near *minima*, *Bursa belgica*, etc. At Brimpton, *Gentiana campestris*, a very rare plant in Berkshire, was seen in some quantity. On Mortimer Common, *Radiola* was in abundance, in company with *Centunculus* and a new variety of *Chenopodium polyspermum*. At Churn, Brimpton, etc., a new hybrid Thyme was gathered. Dr Ronniger connects it with the name of A. Bruce Jackson, who worked at the Thymes, but this was not one of his finds. A new *Rubus*, *R. curvispinis* Watson (first seen in 1896), was gathered at Inkpen.

The chief event for the Secretary was his eightieth birthday, which his many friends throughout the botanical world and elsewhere honoured in so marked a degree. Upwards of 800 addresses, letters, photographs, and post cards poured in, and the members gave him a reception in the Great Central Hotel, London, where nearly 200 friends assembled to greet him. The Viscount Grey of Fallodon gave a most charming address, and handed over a cheque which will go to the payment of a portrait which Mr De Lazlo has kindly consented to paint. May I say how immensely I appreciate the magnificent kindness of the members. It has been a real incentive to further work. It is true that for many years I have laboured very hard to make our Society successful, and as far as possible to do what I could for every member, but this was a pleasure in itself. Such work is not always recognised, but when it is in such an ample fashion tears of thanksgiving come unbidden to the eyes.

During February and March I visited Cyprus, and went over 1700 miles through that beautiful and interesting island, being greatly aided in my researches by Dr Unwin, who lent me Mr Qongur, one of his staff, to go with me through the island. In an appendix to the Report, I give a list of the additions I made in 1928 and 1930 to its flora.

To the authorities of the Royal Botanic Gardens at Kew and Edinburgh, and of the Natural History Museum at Cromwell Road, we are indebted for help. Among foreign botanists we are grateful to M. Patrice Riencourt de Longpré for determining the Leguminosae, Prof. O. E. Schulz for naming the Cruciferae, Dr Ronniger the Thymes, Dr Almquist the Shepherd's Purses, Dr J. Murr and Dr P. Aellen the Chenopods, Dr R. Danser the Polygonaceae, Dr Dahlstedt the Dandelions, Dr F. Jaquet the Alchemillas, Dr Probst the Adventives, Dr K. Zahn the Hawkweeds, Dr H. Schinz the Adventives, and Prof. J. Holmboe.

To Dr S. Howard Vines, F.R.S., the Rev. F. Bennett, Mr T. Gambier-Perry, and Mr R. H. Corstorphine we are indebted for literary help; and for critical examinations of British species we are very grateful for the kindness shown by Mr J. Fraser, Dr E. Drabble, Mr C. E. Britton, Mr W. H. Pearsall, Col. A. H. Wolley-Dod, Rev. H. J. Riddelsdell, Mr W. Watson, Mr D. Lumb, Mr A. E. Wade, Mr R. Butcher, Mr I. A. Williams, Mr W. O. Howarth, Mrs Gregory, and Mr P. M. Hall.

Our death roll has been heavy, and includes that fine taxonomist, Prof. C. H. Ostenfeld, Sir Arthur Dorman, Lord Melchett, Mr J. Comber, and Mr R. Grierson.

Congratulations are offered to Mr Butcher and Miss Strudwick on their completion of the companion volume to Bentham's Handbook. The drawings are excellent.

The end of the year was marked by a very serious illness, which kept me in my room for six months, a contingency which proved the advisability of the previously appointed Advisory Committee:—Rt. Hon. Harold T. Baker, Hon. Mrs G. Baring, Mr R. H. Corstorphine, Sir Roger Curtis, Mr C. E. Britton, Lady Davy, Mr and Mrs Foggitt, Mr P. M. Hall, Mr W. H. Pearsall, Miss Vachell, and Mrs Wedgwood. I am extremely interested in the future of the Society, which I hope may go on in years to come from strength to strength. I may mention that I have left my House, Herbarium, Library, Paintings, and Furniture, with an endowment and a curator, as a Botanical Institute for the use of Botanists and a help to our own Society.

Without in any way wishing to prejudice the choice of the members, may I say that it seems to me most desirable to secure the services of Mr W. H. Pearsall as Secretary, with perhaps my Curator as an assistant, and of Mr and Mrs Foggitt as Treasurers, and of Mr R. H. Corstorphine, who has seen our Reports through the press for nearly twenty years.

NEW MEMBERS.

Miss A. J. Armitstead (1931); Mr Hyatt C. Baker (1931); Mrs Balfour; Lord Henry Bentinck; Mr G. J. V. Bemrose (1931); Marchioness of Blandford (1931); Lady Birchall; Miss R. Blizzard; Dr W. M. Buchanan; Mr H. E. Bunker; Miss Ursula Duncan (1931); Mr A. E. Ellis; Mr J. N. Frankland; Mr C. S. Garnett (1931); Mrs J. A. Groves; Mrs A. D. Houstoun; Mr J. G. Lawn; Lady Legard (1931); Viscountess Lewisham; Bot. Sect. London Nat. Hist. Soc., Mr Short; Mr Compton Mackenzie, University of Michigan; Mr B. Lindquist; the Lord Macmillan; Mr E. L. M. Major; Mr C. E. Marks; Geraldine, Countess of Mayo; Marlborough College, Mrs B. Milvain; the Earl of Morley; Miss Paine (1931); Miss K. Pickard; the Lady Severn; Mr A. Smith; the Countess Spencer; Miss Stevens; Miss E. T. S. Stewart; Mr G. W. Temperley; Mrs K. B. Tindall; Mr B. T. Ward; Prof. J. A. S. Watson; Miss M. Wilkinson.

PLANT NOTES, ETC., FOR 1930.

(*Mostly Plants New to the British Isles or Notes on British Species inserted here for Convenience of Reference.*)

ABBREVIATIONS.—† before a name signifies the plant is not native; × = a hybrid; ± more or less; ! after a locality, that the Secretary has seen the plant there; [ ] that the plant is not British or the record is doubtful; *Ann. Bot.* = *Annals of Botany*; *Bot. Abstr.* = *Botanical Abstracts*; *Gard. Chron.* = *Gardeners' Chronicle*; *Ir. Nat.* = *Irish Naturalist*; *Journ. Bot. or J. of B.* = *Journal of Botany*; *Nat.* = *The Naturalist*; *N.W. Nat.* = *North Western Naturalist*; *Ph. Journ.* = *Journal of the Pharmaceutical Society.*

21/1. PAPAVER SOMNIFERUM × RHOEAS = P. RUPIVAGUM. Ashford, Kent, W. C. WORDSELL in *Proc. R.H.S.*, cxviii., 1930.

†45/9(2). COCHLEARIA MACROCARPA W. & K. Alien, Hungary, etc. Large capsules. Leaves with cartilaginous teeth. Liphook, Hants, Miss W. M. FOWLER.

†49/18(2). SISYMBRIUM INCISUM Engel. Alien, N. America. Formby, S. Lancs, J. F. PICKARD.

59/2(2). BURSA ALANDICA (E. At.). Welwyn, Herts, HUGH PHILLIPS.

59/24(2). B. SEGETUM (E. At.). Wymondley, Welwyn, Hatfield, Herts; Clifton, Pegsdon, Beds; Beaulieu, S. Hants, HUGH PHILLIPS.

59/28(2). B. PASTORIS, nova species. Trearddur Bay, Anglesey, G. C. DRUCE. A curious plant. It will take some time to prove.

100/5. CERASTIUM VULGATUM L., var. HANBURYENSE mihi. Thurso, Caithness, F. J. HANBURY. Differs from type in its glabrous, fleshy, shining leaves and pedicels with few glandular hairs. Keeps constant in cultivation at Potterne. Gathered at Thurso in 1915 by Mr Hanbury. The leaves were so succulent as to break in bending. G. C. DRUCE.

102/5. ARENARIA SERPYLLIFOLIA L., var GLANDULOSTRICTA Drabble. Allied to var. *stricta*. Similis sed sepalis foliisque superioribus piliis glandulifera vestita. Durdham, Bristol, H. G. WILKINSON in *Herb. Drabble*, June 11, 1885, and also found by Dr Drabble.

102/6. A. LEPTOCLADOS Guss., var. MICRANTHA Drabble in Journ. Bot., 373, 1930. Freshwater, Isle of Wight; Coffinswell, Devon; Start, Somerset, E. DRABBLE.

†115/4. ALTHAEA ACAULIS Cav. Alien, Syria, etc. Grain alien, Grimsby, N. Lincs, 1913, J. LARDER, ex F. A. LEES.

†117/13. MALVA BRASILIENSIS Desr. Alien, S. America. Lady Anne's Mill, Botley, Leeds, Yorks, F. A. LEES.

†125/7. LINUM REFLEXUM Ait. Alien. Meanwood, Yorks, F. A. LEES.

142/2. ACER CAMPESTRE L., var. BRYONIOIDES Druce. Loddon Bridge, Berks. Leaves downy, three-lobed, the lobes cut into 3-5 rounded lobes, resembling the leaves of *Bryonia dioica*. G. C. DRUCE.

The Leguminosae have been kindly named by M. P. DE RIENCOURT.

†153/4. MEDICAGO HISPIDA Gaertn., var. BATTANDIERII Rienc. Burton-on-Trent, Staffs, G. C. DRUCE.

†153/8. ×M. VARIA Martyn, var. PROCUMBENS Fries. (Dc. 1136.) Adventive. Colchester, N. Essex, 1929, G. C. DRUCE.

155/1. TRIFOLIUM MEDIUM (L.) Huds., var. MONTANUM Rienc. (Dc. 1081.) Twinstead, N. Essex, NOTT and DRUCE.

155/2. T. PRATENSE L., var. ANGLICUM (mod. LUTESCENS) Rienc. Roade, Northants, G. C. DRUCE.
Var. AMABILE Rienc. Thornton Haugh, Cheshire, Rev. W. W. MASON.
Var. BORDERI. Huisinish, N. Harris, G. C. DRUCE.

†155/37. T. RESUPINATUM L., var. SUAVEOLENS (mod. PARVIFLORA). Burton-on-Trent, Staffs, G. C. DRUCE.

†155/40(2). T. VESICULOSUM Savi. Alien, S. Europe. Portishead, N. Somerset, N. & C. SANDWITH.

156/1. ANTHYLLIS VULNERARIA L., var. KRALIKA (CAMPANIANA). Banchory, Kincardine, 1927, G. C. DRUCE.

160/5. LOTUS CORNICULATUS L. (GRANDIFLORUS PRATICOLA ROBUSTA). Wytham, Berks, G. C. DRUCE.

160/6. L. TENUIS W. & K., var. GRACILIS VULGARIS Rienc. Long Melford, W. Suffolk, G. C. DRUCE.

166/10(2). ASTRAGALUS ODORATUS Lam. Alien, Orient. Bath, Somerset; Burton, Staffs, G. C. DRUCE. On examining this I came to the conclusion that it was not *boeticus* and sent it to M. Riencourt. He would not determine it as there were no seeds, but thought it might be American. Mr N. Sandwith has compared it with *A. odoratus* at Kew and finds they agree.

176/1. VICIA SYLVATICA L., f. HIBERNICA Rienc. White Sand Bay, Antrim, G. C. DRUCE.

176/3. V. CRACCA L., var. GALLO PROVINCIALIS Rienc., f. LUXURIANS GERARDI. Burton-on-Trent, Staffs, G. C. DRUCE.

The RUBI have been kindly named by Mr W. WATSON.

185/1. RUBUS IDAEUS × PHENICOLASIUS = R. PAXII Focke. Hall Road, S. Lancs, J. A. WHELDON. See *Journ. Royal Hort. Soc.*, 209, 1906.

185/2. R. NESSENSIS W. Hall, var. SEXTUS (Krause). Fittleworth, W. Sussex; Badby Wood, Northants, 1921, L. CUMMING. Stem bluntly angled, glaucous. Petioles channelled. Basal leaflets with stalks 2-3 mm. long. Calyx segments long, reflexed in fruit. The unfurrowed stem, armed with only very small prickles, easily distinguishes it from *R. sulcatus.*—W. WATSON.

185/7. R. NITIDUS W. & N., var. DIVARICATUS (P. J. M.). Crookham Heath, Berks, 1893, G. C. DRUCE; Snelsmore Common, Berks, W. M. ROGERS, as *nitidus*, teste BABINGTON.

185/14(2). R. INCARNATUS P. J. M. North Leigh, Bladon, Oxon; Tubney, Berks; Market Rasen, Lincs; Brickhill, Bucks, G. C. DRUCE.

185/18(2). R. VULGARIS W. & N. New to Britain. Brickhill, Bucks, 1899, G. C. DRUCE. Rogers thought it might be an abnormal *carpinifolius*. Sellack, Hereford, 1907, L. CUMMING, sent as *micans*. "Focke would merge *R. Lindleianus* with *R. vulgaris*, but I think they may be kept distinct without much difficulty. A. Ley's Aconbury *R. Salteri* (not *R. Salteri* Bab. by any means), is very near to this *R. vulgaris*."—W. WATSON; also from Sellack, Hereford, A. LEY; May Hill, Gloster, L. CUMMING.

185/18(3). R. PERARMATUS W. Watson. Caerphilly, Glamorgan, 1907, H. J. RIDDELSDELL, as *Salteri* Bab.

185/30(2). R. MUENTERI Marss. Stalmine, Lancs, 1891, J. A. WHELDON, as *Selmeri*; also from Binley Colliery and Brandon, Warwick, L. CUMMING.

185/35(2). R. RECTANGULATUS Maass. in Ascherson & Graebner's Flora des Nordostdeutschen Flachlandes (1898-9), p. 397. G. Braun Herb. Rub. Germ., No. 49 (collected by Maass.). Vide spec. auth. Near Wycombe, Bucks, July 1899, G. C. DRUCE. Det. *argentatus* P. J. M. by W. M. ROGERS.

185/45(2). R. PROPINQUUS P. J. M. Hollow below Ilsington, Dartmoor, S. Devon, 1904, W. M. ROGERS, as *argentatus*; Pengithly, Herefordshire, 1891, A. Ley (det. as *argentatus* by W. M. R.); Tudorville Quarry, Ross and Sellack, Hereford, 1907, L. Cumming, as *argentatus*.

185/46(2). R. cuspidifer M. & L. St Weonards, Hereford, 1891, A. Ley; road to Doddington, Lincs, 1907, L. Cumming, as *argentatus*, teste W. M. R.; probably this from Vales wood, R XI Towns, Salop, 1892, E. F. Linton, as *erythrinus*.

185/46(3). R. bifrons Vest. Forest near Micheldean, W. Gloster, 1907, L. Cumming; Durdham Downs, W. Gloster, 1898, G. C. Druce, as *Lindebergii*. "Exactly matches a specimen I have from Alsace. The straight prickles in the panicle, the blunt-angled stem, and quite different truncate-based terminal leaflet distinguish it from *R. Lindebergii*."—W. Watson. Near Perranzabuloe Church, W. Cornwall, F. Rilstone, as *R. nemoralis*, var. *cornubiensis* Rog. & Ridd. in *Rep. B.E.C.*, 1924. "It extends across Central Europe from the Carpathians to the Rhine, the Paris Basin and the Belgian Ardennes. Apparently the continental plant exactly."—W. Watson.

185/46(4). R. vulnerificus Lef. Bladon, Oxon, G. C. Druce. Four Shire Stone, E. Gloster, H. J. Riddelsdell, as *subcarpinifolius*. See *Rep. B.E.C.*, 1920. Aberdare, Glamorgan, 1905, H. J. Riddelsdell, as *robustus*; Rowbottom Park, N. Somerset, Miss I. M. Roper, as *Godronii*; Curridge, Berks, G. C. Druce.

185/46(5). R. neomalacus Sudre. Mullion, Cornwall, W. M. Rogers, as *thyrsoideus*.

185/46(6). R. lasiothyrsus Sudre (=R. villicaulis Boreau). St Peter's Barracks, Guernsey, 1907, G. C. Druce. "Babington recorded *R. villicaulis* in 'Primitiae Florae Sarnicae,' but Rogers could not find it. Possibly this was what Babington found."—W. Watson.

185/47(2). R. heteromorphus Rip. Llanberis, Carnarvon, 1904, G. C. Druce.

185/49(2). R. curvispinis Watson MS. (R. dumnoniensis Rogers, p.p. non Bab. R. dumnoniensis Sudre, t. 21, 1. No. 27 Brit. Rubi, p.p.). Christchurch, Hants, Coll. Linton; Inkpen, Berks, 1894, G. C. Druce. "*R. curvispinis* differs from *R. dumnoniensis* Bab. (see *Journ. Bot.*, 1890), in the crimson stem, petioles and flowering axes; the shorter, unequal and more curved prickles, the roundish terminal leaflets, the long stalks of which bear crowded and much curved prickles; the gland-fringed stipules and bracts; and especially in the glabrous receptacles. The flowers appear to be pink and the carpels glabrous, but this needs verification on the living plant. *R. dumnoniensis* has milk-white flowers and pilose carpels and receptacles, and has the look of *R. adscitus* and *R. ramosus*. It is allied to *R. villicaulis*, whereas *R. curvispinis* is nearer to *argenteus* and the Discolores."—W. Watson.

185/52(2). R. LASIOCARPUS W. Watson (R. AMPLIFICATUS Rogers, p.p. Sudre non E. Lees). Near Tintern, Monmouth; Aconbury, Hereford, 1888, A. LEY.

185/53. R. MACROPHYLLUS W. & N., var. BOULAYI Sudre. Christchurch, Milton, Branksome Park, Hordle, S. Hants; Badby Wood, Northants.—L. CUMMING.

185/64(2). R. HIRTIFOLIUS P. J. M. Saintfield, Co. Down, 1907, WADDELL; Stokenchurch, Oxon and Bucks, H. J. RIDDELSDELL, as *fuscus* forma, is probably this.

185/64(3). R. DIVERSIARMATUS W. Watson B.E.C., 1930. Tintern, Monmouth, A. LEY, as *erythrinus*.

185/68(2). R. HIRSUTISSIMUS Sudre & Ley. Oxshott, Surrey, 1922, H. J. RIDDELSDELL; Bognor Common, W. Sussex, 1914, L. CUMMING, as *R. leucanthemus*.

185/80(2). R. BANNINGII Focke. Pikes Peak, Lyndhurst, S. Hants, 1919, L. CUMMING, as *micans*.

185/83(2). R. GELERTII Frid., vera. Quarry, Uckfield, E. Sussex, 1897, E. H. FARR, as *mercicus*, var. *bracteatus*. The first seen from Britain by W. WATSON.

185/84(2). R. BADIUS Focke. Langworth Wood, N. Lincoln, 1907, L. CUMMING, as " probably *infestus*."

185/89. R. DREJERI G. Jens., var. HOMOEACANTHUS F. & G. Durdham Down, W. Gloster, 1914, J. W. WHITE, and 1910, Miss I. M. ROPER.

185/92(2). R. GENEVIERII Bor. Corfe, Dorset, L. CUMMING; Amersham, Bucks, 1924, G. C. DRUCE and H. J. RIDDELSDELL, as *uncinatus*.

185/99(2). R. HETEROBELUS Sudre. Wareham, Dorset, E. F. LINTON, as *praeruptorum*; Berewood, Dorset, R. V. MURRAY, as *praeruptorum*.

185/100(2). R. DIVERSUS W. Watson. Coomb Wood, Warwick, L. CUMMING, as *Kaltenbachii*.

185/106. R. MUTABILIS Genev., var. REGNORUM W. Watson. Witley and Farley Commons, Surrey, W. WATSON; Durdham Down, W. Gloster, 1910, Miss I. M. ROPER, as *Drejeri*; Lynch, W. Sussex, F. A. ROGERS.

185/109(2). R. INSOLATUS P. J. M. Brandon Wood, Warwick, L. CUMMING, as *Bellardi*.

185/109(3). R. HYLONOMUS M. & L. Tunbridge Wells, W. Kent; Eridge, E. Sussex. " This is the *R. hirtus*, var. *Menkei* Bab.; the *R.*

pygmaeus Bab. and the *R. praeruptorum* as cited by Boul. from Babington," teste W. WATSON.

185/142(2). R. ACULEOLATUS P. J. M. (near ROSACEUS). Boars Hill, Berks, 1914, G. C. DRUCE.

194/7. ROSA SQUARROSA Rau (DUMALIS auct.), var. BARTLETTIANA (Harrison). Wheelbark, near Stocksfield, Northumberland.

194/12. R. GLAUCA Vill., var. BERNICIENSIS K. Blackburn. Roadside hedge a few miles north of Morpeth, Northumberland. Near *denticulata* Keller. Branches dark-purple, leaf-margins strongly biserrate with gland tipped teeth. Caulis et ramorum aculei curvati falcatique; rami florentes etiam aculeis parvis et tenuibus aciculisque sparsis muniti. Folia plerumque septenata, rarius quinta; stipulae angustae, cum auriculis acutissimis, in margine glanduloso-ciliatae; foliola medioeria, ovato-elliptica (20×12 mm. usque 30×15 mm.). subtus glandulosa sed sub nervo medio setoso-glandulosa, biserrata; petioli pubescentes glandulosi; pedunculi breves, setoso-glandulosi, bracteis acutis angustisque superati; sepala pinnatifida, glanduloso-ciliata. in fructu patentia vel reflexa, denique cadentia; receptacula globosa, bene fructifera; discus planus; styli breves albo-lanati vel villosi capitulum planum formantes. Proc. Univ. Durh. Phil. Soc., vol. 8.

194/19. R. TOMENTOSA Sm., var. RICHARDSONIANA Harrison in Proc. Univ. Durham Phil. Soc., viii., 161. (35 chromosomes.) Wheelbirks. near Stocksfield, Northumberland, J. W. HESLOP HARRISON.

194/19. R. TOMENTOSA, var. DIMORPHA Dum. Ref. No. 3555. Aimes Green, Essex, 17th August 1929, C. E. BRITTON, labelled *R. omissa*, var. *Sherardi*. "It is not Davies's plant, though it might be what Continental botanists label *R. tomentosa*, var. *subglobosa* Car. Keller confirms the above name."—A. H. WOLLEY-DOD.

194/19(2). R. HURSTIANA Harrison. For several years I have had a rose under observation which agrees with none of the recognised British species. By this it is not intended to imply that the form is a microgene of some major species, but that, as far as species go amongst the Canine roses, it reaches the level of, say, *R. tomentella* or *R. micrantha*. Although I had felt certain of its true position for some time, two or three years ago specimens were submitted to Wolley-Dod in England and to Keller in Switzerland, with the result that the former was inclined to see in it some unusual *omissa* (*Sherardi*) form and the latter to assign it to *R. tomentosa* var. *foetida*. Actually Wolley-Dod's conception was much more in harmony with the facts, for Keller's views are untenable. Later, in deference to Keller's opinion, the English worker fell back on the position that the rose was some novel and strange *tomentosa* micromorph. In doing so, he felt considerable doubts.

For my part, knowing the plant from many stations and its remarkably small range of variation, I agreed with neither. Hence, to complete my studies, and to justify my stand, I transplanted half a dozen specimens from two distinct colonies to the garden, with the result that I feel that no course remains but to describe the plant as a new species lying between *tomentosa* and *Sherardi.*

ROSA HURSTIANA Harrison.

Fruticulus parvis (25 cm.—1 m. altus). Rami aculeis leviter arcuatis armati. Foliola viridia, parva vel mediocria, ± 1-3 cm. longa et ± .75-1.6 cm. lata, elliptica supra in principio disperse et adpresse pilosa, subtus adpresse pilosa, plus minusve glandulosa; serratura composita, dentes denticulis glandulosis 3-8. Flores solitarii, pedunculi breves < 1 cm. longi, glanduloso-hispidi; petala valde rosea; sepala patentia subpersistentia; receptaculum fructiferum oblongum disco plano; styli pilosi. Chromosomata 42.

Hab. Northumberland, Durham, N.E. Yorks, Bute, Perthshire, Angus, Haddington, Berwick.

Named after my friend, Dr C. C. Hurst, in recognition of his important work on roses.

In continental floras this plant runs down to *R. marginata* Wall., and with that plant it has considerable affinities.

In appearance it is a low shrub with neither the tufted appearance of *R. mollis*, the more or less arching regularity of *R. Sherardi*, nor the tall, loose arching habit of *R. tomentosa.* Actually in the garden, in habit one cannot distinguish it from *Rosa gallica* forms growing with it, and indeed, in many other characters, it suggests that species.

On seeing it one is instantly struck by its definitely green leaves, slightly lighter below, with well marked nerves. Above, the leaflets are clad with a short lax pubescence and below with a slightly more pronounced vestiture, still loose in texture. The glands are generally quite conspicuous with an odour recalling that of some *Sherardi* segregates, but still quite distinctive. The stipules are narrow and possess divergent pointed auricles.

Bushes growing alongside *mollis-Sherardi* colonies commenced to flower on July 3rd, *mollis* on June 15th, and *Sherardi* on June 16th. As true *tomentosa* is almost certainly absent from or rare in Durham, no phenological comparison is possible with that species. The fruits on *R. mollis* reddened toward the end of July, those of *Sherardi* in mid-August and the smooth flask-shaped *Hurstiana* fruits in mid-September. On October 7th no *Hurstiana* hips were quite ripe, and to-day (October 14th) some are greenish, all are hard and bear spreading sepals.

Finally, in the size of the orifice of the disc, *Hurstiana* agrees with *Sherardi*, to which otherwise its resemblance is slight.

The following key will help to differentiate the new species from its nearest allies of the Vestitae:—

1. Fruit ripening early.

Rosa mollis Sm.—Disc flat or slightly concave; its diameter two to three times that of the orifice through which the styles pass. Sepals more or less connivent and persistent until the decay of the fruit. Chromosomes 28.

R. Sherardi Dav.—Disc much the same but occasionally faintly convex. Diameter of disc 2½-3½ times that of its orifice. Sepals less persistent, more inclined to be spreading and pinnate. Chromosomes 28.

2. Fruit ripening late.

R. Hurstiana Harrison.—Disc flat; diameter three times that of its orifice. Sepals spreading, fairly persistent on the ripe fruit. Chromosomes 42. (The cytological investigations are not yet complete.)

R. tomentosa Sm.—Disc flat to quite conical with the orifice varying from the diameter of a pin to two-ninths of the diameter of the disc. Sepals rarely even subpersistent and nearly all falling on the ripening fruits. Chromosomes 35.

J. W. HESLOP HARRISON.

194/21. R. MOLLIS Sm., var. HETERACANTHA R. Kell. in sched. "An interesting variety which I have not seen in Central Europe."—R. KELLER. Moorlands near the Minera Lime Works, Denbigh, N. Wales, September 14, 1929, C. WATERFALL, ex A. H. WOLLEY-DOD.

194/23. R. SPINOSISSIMA L., var. RIVALIS Harrison. Chromosomes more or less sterile. Wheelbirks, near Stocksfield, Northumberland, J. W. HESLOP HARRISON.

194/30. R. MULTIFLORA Thunb. (teste Fraser). Alien, China and Japan. Hortal. Flowers corymbose, small, white. Branches, peduncles, and calyx tomentose. Leaves sometimes but not always hairy in the garden form; stipules pectinate. Found by Mr F. CLARKE in a hedge near Puttenham, Surrey, where he showed me this ornamental Rose with its crowds of snowy white flowers. It did not seem to have been intentionally planted.—G. C. DRUCE.

194. ROSA [Tourn.] L. Naturalist, 161, 1930. The groups treated are *Rosa glauca*, *R. coriifolia*, *R. mollis* and *R. omissa*. In passing one may say that it seems unfortunate that the name *R. coriifolia* should be used, since *R. caesia* is the older name, as was long ago pointed out by M. Crépin. Practically two groups are involved—the *glauca-coriifolia* and *mollis* and *omissa*. Harrison believes the former two are glaucous and pubescent phases of one species, and in 1926 he suggested the name for the combined group should be *R. Afzeliana* Fr.; but recent observations point to physiological distinctions between them. *R. glauca* ascends to greater altitudes, and *coriifolia* descends lower—even to the coast-dunal. He believes that *subcoriifolia* Barclay and *subcanina*

Christ are also sub-species. This does not exhaust the difficulties—for there is mixed assemblage recorded by Wolley-Dod under *coriifolia*, var. *Bakeri* and its sub-var. *Lintoni*. He believes there is little, if anything, to differentiate between the extremes of the old *coriifolia* and *R. rubiginosa* (why not *Eglanteria*?), so that no sharp division line can be drawn between them. He therefore prefers to leave *R. Bakeri* in position with *coriifolia*, as a well-marked additional sub-species, with *Lintoni* as a variety. He is not satisfied with Boulenger's identification of *dumalis* Bechst. with *glauca* Vill.; but as *R. rubicaulis* Vill. = *glauca* Pourret, 1788, and *R. glauca* Vill. are no longer available, he suggests that *glaucophylla* Winch, 1816, should replace it. He also agrees with my contention that *R. coriifolia* should be displaced by *caesia* Sm. He also unhesitatingly chooses *R. Sherardi* Dav. to replace *R. omissa* Déség. Personally I regard *R. mollis* as distinct from *Sherardi* forms, and Crépin too says it was physiologically a distinct species. The arrangement suggested by Dr Harrison is appended by the kind permission of *The Naturalist*. In passing I may say that the combinations var. *frutetorum* and *Watsoni* have been made by me in the " British Plant List."

ROSA CAESIA Smith (1811).

- I.—Sub-sp. *eucaesia*, comb. nov. *R. caesia* Sm., Eng. Bot., t. 2367 (1811).
  - (a) Var. *frutetorum*, comb. nov. *R. frutetorum* Bess., Enum. Pl. Vol. (1822).
    - (i) f. *implexa*, comb. nov. *R. implexa* Gren., Rev. de la Fl. des Mts. Jura (1874).
  - (b) Var. *Watsoni*, comb. nov. *F. Watsoni* Baker, Rev. Brit. Roses (1864).
  - (c) Var. *bovernieriana*, comb. nov. *R. bovernieriana* Lagg. et de la Soie, in Déség. Cat. Rais. (1876).
  - (d) Var. *Winchiana*, var. nov. Foliola supra obscuro-viridia; subtus caesia et perglandulosa.
- II.—Sub-sp. *Bakeri*, comb. nov. *R. Bakeri* Déség., Journ. Bot. (1864).
  - (a) Var. *Lintoni*, comb. nov. *R. coriifolia*, var. *Lintoni* Scheutz., Journ. Bot. (1888).
    - (i) f. *setigera*, comb. nov. *R. coriifolia*, var. *Bakeri*, f. *setigera* W.-Dod, Journ. Bot. (1924).
  - (b) Var. *celerata*, comb. nov. *R. celerata* Baker, Rev. Brit. Roses (1864).
- III.—Sub-sp. *subcollina*, comb. nov. *R. subcollina* Chr., Ros. Schw. (1873).
  - (a) Var. *subcoriifolia*, comb. nov. *R. subcoriifolia* Barclay, Ann. Scot. Nat. Hist. (1899).
  - (b) Var. *incana*, comb. nov. *R. caesia*, var. *incana* Borr., ex Hook. Brit. Fl. (1835).
  - (c) Var. *pruinosa*, comb. nov. *R. pruinosa* Baker, Rev. Brit. Roses (1864).

- (d) Var. *obovata*, comb. nov. *R. tomentosa*, var. *obovata* Baker, Journ. Linn. Soc. (1869).

IV.—Sub-sp. *glaucophylla*, comb. nov. *R. glaucophylla* Winch, Monthly Mag. (1916).
- (a) Var. *Reuteri*, comb. nov. *R. Reuteri* God., Cat. Pl. Vasc. Gen. (1861).
  - (i) f. *Crepiniana*, comb. nov. *R. Crepiniana* Déség., ex Baker, Rev. Brit. Roses (1864).
  - (ii) f. *transiens*, comb. nov. *R. Reuteri*, var. *transiens* Gren., Fl. Jura (1864).
- (b) Var. *myriodonta*, comb. nov. *R. Reuteri*, var. *myriodonta* Chr., Ros. Schw. (1873).
- (c) Var. *adenophora*, comb. nov. *R. Reuteri*, var. *adenophora* Gren., Fl. Jura (1864).
- (d) Var. *orbicans*, comb. nov. *R.* (*Afz. gl.*) *orbicans* Almq., Ros. Mus. Reg. Suec. (1920).
- (e) Var. *stephanocarpa*, comb. nov. *R. stephancarpo* Déség., et Rip. Mem. Soc. M. et L. (1873).
  - (i) f. *Schuetzii*, comb. nov. *R. euglauca*, var. *Schuetzii* Schw., Mitt. Bay. Bot. Ges. II. (1908).
  - (ii) f. *decorosa*, comb. nov. *R. euglauca*, var. *stephanocarpa*, f. *decorosa* H. Br., in Beck Fl. Niederöst. (1890).
- (f) Var. *oenensis*, comb. nov. *R. glauca*, var. *oenensis* R. Kell., Syn. VI. (1900).

V.—Sub-sp. *subcanina*, comb. nov. *R. glauca*, sub-sp. *subcanina* Hayek, Fl. Steier. (1908).
- (a) Var. *denticulata*, comb. nov. *R. subcanina*, var. *denticulata* R. Kell., Syn. VI. (1906).
- (b) Var. *Melanophylloides*, comb. nov. *R.* var. *Melanophylloides* J. B. Keller, Deutsch. Bot. Monatsch. (1886).
- (c) Var. *Kaufmannii*, comb. nov. *R. subcanina*, var. *Kaufmannii* Schw., Mitt. Bay. Bot. Ges. (1913).
- (d) Var. *montivaga*, comb. nov. *R. montivaga* Déség., Mem. Soc. Acad. M. et Loire (1873).
- (e) Var. *Bartlettiana*, comb. nov. *R. dumalis*, sub-sp.*subcanina*, var. *Bartlettiana* Harrison, Proc. Univ. Durh. Phil. Soc. (1930).
- (f) Var. *berniciensis*, comb. nov. *R. berniciensis* Blackburn, Proc. Univ. Durh. Phil. Soc. (1929).

Turning now to the roses standing in our lists under the names *Rosa mollis* Sm. and *R. omissa* Déség., one change, long overdue, must be made at once. As the name *R. omissa* Déség. (1862) is applied to a rose only varietally separable from *R. Sherardi* Dav. (1913), the latter must replace the former as chief of the file.

Again, *R. Sherardi* and *R. mollis* agree cytologically (Blackburn and Harrison, 1921) for both have a chromosome complement of 28, and both exhibit diakinetic figures with seven bivalents and fourteen univalents. On the contrary, *R. tomentosa* varieties reveal a somatic count of 35 with seven bivalents and twenty-one univalents at diakinesis. Clearly, in this fundamental respect, the alliance is rather between *R. mollis* and *R. Sherardi* than between *R. tomentosa* and *R. Sherardi*. Furthermore, there exists totally different and strong evidence pointing in the same direction.

In studying the growing plants in areas where both *R. mollis* and *R. Sherardi* abound, it is found that the forms of the latter approach those of the former exceedingly closely, and, moreover, accompany that rose to the limits of its range in our mountain districts. On the contrary, *R. tomentosa*, always rare with us, never ascends far, and, in fact, vanishes,* about thirty miles from the coast. *R. Sherardi* must, therefore, be severed from *R. tomentosa*, with which it has been connected by authors who have not possessed adequate facilities for studying it in nature, attached to *R. mollis* and regarded (*sens. restr.*) as specifically the same.

The question then arises as to the position of *R. mollis* itself. It is obviously a near ally of *R. pomifera* Herm., and for both the earliest possible name is *R. villosa* L. (1759), which must be restored at least in a collective sense.

However, if *R. pomifera* is maintained as distinct from *R. mollis*, and enough evidence exists to warrant that, the name *R. mollis* must be retained and applied to one of the sub-species of *R. villosa*. In that case *R. Sherardi* falls into place as a third sub-species of the same aggregate.

Our list, as far as these roses is concerned, thus reads:—

ROSA VILLOSA L. (1759).

I.—Sub-sp. *mollis* (Sm.), Rouy. *R. mollis* Sm., Eng. Bot. (1811).
  (a) Var. *caerulea*, comb. nov. *R. villosa*, var. *caerulea* Woods, Trans. Linn. Soc. (1817).
    (i) f. *glandulosa*, comb. nov. *R. mollis*, var. *glandulosa* Wolley-Dod, Journ. Bot. (1924).
  (b) Var. *pseudo-rubiginosa* Lej., Fl. Spa. (1811).
II.—Sub-sp. *Sherardi*, comb. nov. *R. Sherardi* Dav., Welsh Bot. (1813).
  (a) Var. *omissa*, comb. nov. *R. omissa* Déség., in *Billotia* (1864).
    (i) f. *resinosoides*, comb. nov. *R. resinosoides* Crép., ex Cott., Guide Bot. Cant. Frib. (1891).
  (b) Var. *submollis*, comb. nov. *R. submollis* Ley., Journ. Bot. (1907).
  (c) Var. *uncinata*, comb. nov. *R. tomentosa*, var. *uncinata* Lees, Rep. Bot. Ex. Club (1887).
    (i) f. *pseudomollis*, comb. nov. *R. pseudomollis* E. C. Baker, Journ. Bot. (1892).

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*Colonies of *R. mollis* and *R. Sherardi* exist on the coast sandhills and the coast dunes in both counties.

(d) Var. *Woodsiana*, comb. nov. *R. tomentosa*, var. *Woodsiana* Groves, Rep. Bot. Ex. Club.

(e) Var. *suberecta* Woods, Trans. Linn. Soc. (1817).
  (i) f. *glabrata*, comb. nov. *R. suberecta*, var. *glabrata* Ley., Journ. Bot. (1907).

(f) Var. *eminens*, comb. nov. *R. eminens* Harrison, Vasculum (1916).

(g) *cinerascens*, comb. nov. *R. cinerascens* Dum., Fl. Belg. (1827).

LITERATURE QUOTED.

Barclay, W.—" Perthshire Roses," *Trans. Perth. Soc. Nat. Sc.*, vol. v. (1910). " Further Notes on Scottish Roses," *Ann. Scot. Nat. Hist.* (1903).

Blackburn, K. B., and Harrison, J. W. Heslop.—" The Status of the British Rose Forms," *Ann. Bot.* (1921).

Boulenger, G. A.—" Roses d'Europe," vol. i.: Bruxelles (1924-25). " Sur le *Rosa dumalis* de Bechstein," *Bull. Roy. Soc. Bot. de Belge* (1927).

Crépin, F.—" Revision des Rosa de l'Herbier Babington," *Journ. Bot.* (1896). " Priorité des Noms Specifiques Envisagée au Point de Vue de Genre Rosa," *Bull. Herb. Boiss.* (1897).

Harrison, J. W. Heslop.—" New British Roses from Northumberland," *Proc. Univ. Durh. Phil. Soc.* (1930).

Winch, N.—" Some Indigenous Roses," *Monthly Mag.* (1816).

Wolley-Dod, A. H.—" Roses of Britain," London (1924).

†195/11(2). **PYRUS HUNGARICA** Bornmüller in Mitteil. Thüring. Bot. Ver. N.F. 54, 1913, as forma of sub-species AUSTRIACA in Mitteil. Thüring. Bot. Ver. N.F. 54, 1913. Rocky wooded slope of Clifton Downs, W. Gloster, C. E. SALMON in *Journ. Bot.*, 174, 1930.

†196/2(2). **CRATAEGUS HETEROPHYLLA** Flugge. (*C. neapolitanus* Hort). Alien. Origin doubtful, probably Eastern. Introduced into Britain in 1816. One small tree by a wooded river-side near Tiverton, N. Devon, 1930, Col. G. WATTS. This interesting tree is figured in Lindley's *Botanist Register*, xiv., t. 1161, 1828; xxii., t. 84, 1836; *Ann. Mus. Nat. Hist. Paris*, xii., 423, 1808; Loudon *Arbor. Frut. Brit.*, ii., 864; vi., t. 31 Q, 1838, see p. 829; DC. *Prod.*, ii., 629. Leaves bright shining, subcoriaceous, falling off late, lanceolate-cuneate, toothed at apex, 3-cleft, segments serrate; tube of calyx fusiform, glabrous; flower one-styled; fruit narrower and longer than *monogyna*, one fruited, one seeded; stipules large, pinnatifid. Tree practically thornless, bark shining, ash-coloured. An ornamental tree.

In *Index Kewensis*, *heterophylla* is erroneously made = *Azarolus*, an entirely different species. Col. Watts wrote to me saying that several branches burst into leaf in February.

212/2. SEMPERVIVUM MONTANUM L. Alien, Europe. Frog Lane, Worcester. Established for half a century on an old wall, E. LEES, *Bot. Worc.*, 29, 1867.

†233/4. MESEMBRYANTHEMUM ATTENUATUM Haworth (det. Schinz). Africa, Australia. St Mary's Isles, Scilly Isles, August, 1885, CASTALIA, Countess of Granville.

256/1. CONOPODIUM MAJUS (Gouan) Loret & Barr., var. CONDENSATUM Druce. Sent by Mr J. F. Frankland from Horton-in-Craven, Yorks, growing in a meadow on a gravelly ridge with the type but with no intermediate forms. The small inflorescence is condensed into a globose shape, 15 mm. across; the fruits are small, about 3 mm. long, but whether they produce ripe seed is unknown. Inflorescentia parva, condensata, globosa, 15 mm.

It approaches in some ways to the race *stenocarpa* Rouy & Camus Fl. Fr., viii., 312, which has fruiting umbels contracted, with the rays "redressés," more numerous involucels, but always shorter than the fruiting pedicels; fruits longer, lanceolate-oblong, 1½-2 times longer than styles and the stylopod.

Major Batten Pooll finds specimens growing in Stoke Wood having the edges of the fruits turned in. A further note will appear in next *Report*.

284/1. HEDERA HELIX L., var. UNDULATIFORMA Druce. Salter Hebble, by the Canal, Yorks. Gathered in August last with Mr and Mrs Foggitt. It is markedly different from the ordinary Ivy, by the wavy, not flat, or simply curved surface. The leaf-outline is irregular, sometimes quite pointed, at other times ending in a trifid margin, in which the lateral lobes are pointed, the middle one as long or sometimes shorter, usually longer. The leaves of the barren branches are very variable, but never assuming the outlines of normal *Helix*. Foliis undulatis, irregularis, margine saepe trifido, G. C. DRUCE.

287/2. SAMBUCUS NIGRA L. forma. Differs from the type by the fruit-stalks being light green in colour up to the base of the ripe berry. All on the same tree had this character. Near York, H. SOWDEN. Near by was *S. nigra* L., var. *viridis* Ait.

†318/4(2). ASTER BRUMALIS Nees. Alien, N. America. In a marsh at Ascot, Berks, 1929, G. C. DRUCE, with Lady DAVY.

†318/18(2). A. DIFFUSUS Ait. Alien, N. America. In a marsh at Ascot, Berks, September 1929, G. C. DRUCE, with Lady DAVY.

†318/18(3). A. BERGERIANUS Harvey. KAULFUSSIA AMELLOIDES. Alien, Cape of Good Hope. Morfield, Leeds, Yorks. F. A. LEES, MS.

†318/18(4). A. FOLIOSUS Persoon. Alien, N. America. Waste ground, Mortimer, Berks, G. C. DRUCE.

379/1. TUSSILAGO FARFARA L., forma ALBA. Andoversford, E. Gloster, Miss L. ABELL. Growing by a stream-side for five years; the ligules are white not yellow—ligulis albis.

396/5. CIRSIUM PRATENSE (Huds.) DC., var. ANGUSTIFOLIUM (Rouy) Druce, comb. nov. Farnborough, N. Hants, G. C. DRUCE. Plant about twelve inches high, one-flowered, leaves linear, 12 cm. × 4 dm.—Rouy *Fl. Fr.*, ix., 59.

419/1. HIERACIUM PILOSELLA L., var. SUBVULGARE N. P. STRICTUM N. P. Port Meadow, Oxon; Frilford, 1929, Basildon, 1882, Berks, G. C. DRUCE.

Var. SUBPILOSUM N. P. Basildon, Berks; Porne, Somerset; Andoversford, E. Gloster, G. C. DRUCE.

419/1(2). H. MACROLEPIDIUM Norrl. Bidr. = ? PELETERIANUM Skand. Half. Hierac. Fl., 181, 1888. Chalk Cliff, Freshwater; Carisbrooke Castle, Isle of Wight, G. C. DRUCE.

419/9. H. CLAROPURPUREUM N. P. Tiverton, N. Devon, Col. WATTS.

419/11. H. ANGLICUM Fr. H. MOUGEOTII, sub-sp. ANGLICUM Zahn, var. FILIPES. Foliis subtus subpilosis, in petiolis mollifer sublonge subvillosulis—Zahn, *in litt.* Glen Fiagh, Angus; Skye; Betty Hill, W. Sutherland, G. C. DRUCE.

Var. SUBGLABRIPES. Foliis minus rigidis, minimis et brevibus, in petiolis vex densiusculis pilosis—Zahn, *in litt.* Glen Fiagh, Angus; Betty Hill, W. Sutherland, "petiolis vix pilosis;" forma, Betty Hill, W. Sutherland, G. C. DRUCE.

419/125(2). H. ACUMINATUM Jord. Gr. Jard. Gren., 12, 1849. France, Germany, N. Italy, Switzerland, Austria, etc. Asham, N. Somerset, 1929, G. C. DRUCE.

419/125(3). H. ASPERNATUM Jord. in Bor. Fl. Cent. Fr., iii., 11, 406. Zahn, t. 30, p. 380. Var. ANGLICUM (Zahn). Sapperton, E. Gloster, G. C. DRUCE. A typo involucris crassis ad 10 mm. longis, squamis latioribus ligulis magnis differt.—Zahn, *in litt.*

419/125(4). H. BREVIDENTATUM Jord. in Bor. Fl. Cent. Fr., iii., 11, 397. France, Bavaria. Nov. var. MULTIFLORUM Zahn ined. Involucris ± dense floccosis, pilis solitariis obsitis, stylis ± luteis.—Zahn, *in litt.* Huntercombe, Oxon, 1929, G. C. DRUCE.

419/125(5). H. PRESIGNE Zahn, as sub-sp. (H. DIAPHANUM, var. PRAESTANS Lint., p.p.). Burton-on-Trent, Staffs, G. C. DRUCE, teste ZAHN.

419/171(3). H. FASCICULARE Fries Epic., 100, 1862. Orme's Head, Carnarvon, 1884, G. C. DRUCE.

419/184. H. MACULATUM Sm., var. NORMALE. Sudbury, W. Suffolk; Highbridge, N. Somerset, G. C. DRUCE.

Var. SPILODERMUM Zahn in Mag. Bot. Lap., 336, 1922. Mells, N. Somerset, G. C. DRUCE.

Var. PSEUDOMACULATUM Zahn in Mag. Bot. Lap., 336, 1922. Mells, Bath, N. Somerset, G. C. DRUCE.

Var. SPILOPHAEUM (Jord. ex Bor., *l.c.*) Sudre H. Cent., 60. Zahn, 515. (*immaculatum* Zahn in A. & G. Syn., xii., ined.) Only recorded from Bergland by Zahn. Bath, N. Somerset, G. C. DRUCE.

Var. IMMACULATUM Zahn in A. & G. Syn., vi., ined. Bath, N. Somerset, G. C. DRUCE.

419/184(2). H. ARRECTARIUM Jord. in Bor. Fl. Cent. Fr., ed. iii., 11, 402. Sudre H. C., t. xviii. (GENUINUM NORMALE Zahn in titulis Syn. ined.) teste Zahn, 520. Germany, Switzerland, Austria. Cuckoo Lane, Staffs, 1929, G. C. DRUCE.

419/184(3). H. TINCTUM Jord. in Bor. Fl. Cent. Fr., iii., 11, 405. Var. INSIGNUM Sudre. France. Clova, Angus, G. C. DRUCE.

419/184(6). H. MACULATUM (Zahn, 165, sub-sp. 6, p. 516). (Sub-sp.) grex DIVISUM (Jord.) Cat. D., ii., 11, 1848. GENUINUM Sudre. Beaumaris, Anglesey, G. C. DRUCE. First time in Britain, teste Zahn. Folia basilibus interioribus, elliptica lanceolatis, cauliniis superioribus ± lanceolatis longe acuminatis, anthelia furcata, ramis erectis. Foliis leviter vel haud maculatis.

419/245. H. CROCATUM Fr., var. SUBEPILOSUM Dahlst. H. Sc., xxi., 98, 1907. In Engl., 923. Glen Lyon, M. Perth, G. C. DRUCE.

419/252. H. OBLIQUUM Jord. Woody Bay, N. Devon, 1929, G. C. DRUCE.

Var. INDOLATUM (Jord. ex Bor., *l.c.*, 385, 1857) Sudre Hierac. Centr., 18, t. 111. Pilis valde minus uninervosis. Middleton, Durham, 1929, G. C. DRUCE; Glasbury, Radnor; Bovey Tracy, Devon, G. C. DRUCE.

†420/2. ANDRYALA INTEGRIFOLIA L., cf. var. CORYMBOSA (Lam.) W.R. Barry Dock, Glamorgan, 1930, G. C. DRUCE.

428/2. TRAGOPOGON MINOR×PORRIFOLIUS. *Tragopogon porrifolius* L. has been under observation on a piece of waste ground at Gt. Yarmouth since 1924, and possibly earlier (P. E. Rumbelow, A. H. E. Brunning, and C. G. Doughty, members of Gt. Yarmouth Naturalists' Society), where it has by now increased to form a respectable colony. *T. pratensis* L. (*minus* (Mill.)) occurs with it, in plenty, though one cannot say how far back its establishment goes. In 1929 two formes (a) and (b) roughly intermediate between the above, appeared:—

(a) [Now (1930) almost as common as *porrifolius* on the site.] Seeding; but clearly to a degree sterile. Peduncle moderately thickened. Bracts of involucre usually slightly longer, varying as in *porrifolius*. Calyx: hairs and pappus. Corolla: outer florets long, copper colour, base yellow, inner florets shorter, more of yellow visible. Plant bearing the stamp of *porrifolius* in height, and dimensions of capitulum. *Saintyae* E. A. E.

(b) Seeding rarely. Peduncle moderately thickened. Bracts of involucre reaching to tips of florets. Calyx: sepals green, sinuate, pappus usually dwarfed and scanty. Corolla: dull purplish copper, base pale yellow. Capitulum neither opening widely nor closing tightly; corollas not curling at edges at noon. *sterilis* E. A. E.

This year twelve further forms are differentiated by variation in the quality, intensity and local distribution of colour in the florets, correlated with other distinct structural peculiarities:—

(c) Seeding; peduncle slightly or moderately thickened. Bracts of involucre as long or slightly longer than florets. Calyx: normal *Tragopogon* pappus. Corolla yellow; florets and capitulum corresponding in size to *porrifolius*. Six plants only.

(d) Seeding; peduncle moderately thickened. Bracts of involucre much as *porrifolius*. Calyx: normal *Tragopogon* pappus. Corolla light purple, base pale yellow; florets near centre of capitulum showing more pale yellow than purple. Capitulum approaching *porrifolius* in size. *Hallsi* E. A. E.

(e) Seeding; peduncle moderately or much thickened. Bracts of involucre much as *porrifolius*. Calyx: normal *Tragopogon* pappus. Corolla pale coppery purple, but dull. Size of florets and capitulum approaching *porrifolius*. *Readei* E. A. E.

(f) Seeding; peduncle slightly thickened. Bracts of involucre intermediate between *minus* and *porrifolius*. Calyx: normal *Tragopogon* pappus. Corolla copper colour; capitulum intermediate in size between *minus* and *porrifolius*. *Taylori* E. A. E.

(g) Seeding; peduncle slightly thickened. Bracts of involucre much as *minus*. Calyx: normal *Tragopogon* pappus. Corolla yellow, shortly tipped with bronze; size of florets and capitulum as *minus*. *Rumbelowi* E. A. E.

(h) Seeding; peduncle moderately thickened. Bracts of involucre as in *minus*. Calyx: normal *Tragopogon* pappus. Corolla dark velvety puce; size of florets and capitulum approaching *minus*. *Pattersoni* E. A. E.

(i) Seeding; peduncle slightly thickened. Bracts of involucre as in *minus*. Calyx: normal *Tragopogon* pappus. Corolla; palest yellow, almost white, with faint bluish tint discernible; size of florets and capitulum much as *minus*. *Brunningi* E. A. E.

(j) Seeding; peduncle slightly thickened. Bracts of involucre as in *minus*. Calyx: normal *Tragopogon* pappus. Corolla light purple, base pale yellow, inner florets showing more of the yellow than purple; proportions much as *minus*. *Howardi* E. A. E.

(k) Seeding; peduncle slightly thickened. Involucre as *minus*. Calyx: normal *Tragopogon* pappus. Corolla: yellow, suffused to a glow with bronze; florets and capitulum proportioned as *minus*. *Barnardae* E. A. E.

(l) Seeding rarely. Peduncle moderately or much thickened. Bracts of involucre projecting little above florets. Calyx: sepals green, sinuate, with broad base, rarely any pappus. Corolla dull purple; edges not curling inward at noon; capitulum neither opening widely nor closing tightly. Stigma lobes greatly produced. *Hurrelli* E. A. E.

(m) Seeding; peduncle slightly thickened. Bracts of involucre little longer than florets. Calyx: sepals green, sinuate, broad at base, sometimes extending beyond ligulate corolla; rarely any pappus. Corolla greenish yellow, not curling inward at edges towards noon. Capitulum neither opening widely nor closing tightly when in flower. Stigma lobes greatly produced. *Nicholsoni* E. A. E.

(n) Seeding; peduncle much thickened. Bracts of involucre twice length of florets. Calyx: normal *Tragopogon* pappus. Corolla violet, as *porrifolius*. *parviflorus* Syme.

(o) Seeding freely; peduncle slightly thickened. Bracts of involucre about twice as long as florets; corollas of outermost florets not much longer than those nearer centre. Corolla yellow; capitulum smaller than *porrifolius*. Calyx: feathery pappus. *pratensis* L., var. *minus* (Mill.).

(p) Seeding freely; peduncle much thickened. Bracts of involucre as long or slightly longer than florets. Calyx: feathery pappus. Corolla, violet; corollas of outer florets much longer than those of centre. *porrifolius* L.

A. E. ELLIS.

†435/6. CERVICINA GRACILIS (Forst.), nov. comb. (WAHLENBERGIA.) Det. Schinz. Budleigh Salterton, S. Devon, June 1930, Major R. ORME.

439/1. OXYCOCCUS OXYCOCCUS (L.) Dr. = OXYCOCCUS QUADRIPETALUS Gilib., var. Oakhanger, N. Hants, plentiful, Lady DAVY. The larger fruits make this a striking looking plant; the berries are not strictly so pyriform as those from Methven, Perth (see *Rep. B.E.C.*, 288, 1918), but they are not round, and are the largest near the stem and tapering upwards, obpyriform. They are frequently marked with streaks of dark dull purplish brown.

446/2. ERICA TETRALIX L., var. FISSA Druce, flore pleno. When the Botanical party was at Holyhead in June, Miss Margaret Campbell and

Miss Dorothy Meynell brought in from a heathy piece of ground near the South Stack Light House, Holyhead, Anglesey, a heath with large flowers, which, at a distance suggested *Boretta*, but closer examination showed it to be a form of *Tetralix*. I was conducted to the heathland, which the preceding year had been burned. Here and there about it grew this curious form. Usually it had only few flowers, 2-5. These were stalked and nearly 10 mm. long. The corolla was split to the base into 5 lobes, but the corolla was occasionally duplicated. Mr Charles Nicholson tells me he has a plant from a common near Truro, Cornwall, which has " the flowers nearly destitute of corollas, but the styles protrude beyond the calyces, which are normal."

Lady Alethea Buxton writes this account of its discovery:—In the course of a botanical expedition to Anglesey last Whitsuntide. 1930, a peculiar form of *Erica Tetralix* was discovered by Miss Dorothy Meynell. We were, for no particular reason, exploring a heathy place, on the west coast of the Island of Holyhead—this was to the left of the road which goes from Porth Dafarch to the South Stack. The place was dry, sandy, and rather barren with short grass, and patches of heather. And here it was discovered. The *Erica* . . . appeared to be a new and peculiar form of *Erica Tetralix*. There were only a few plants of it, and we found it nowhere else on the Island.

†497/8. SYMPHYTUM GRANDIFLORUM DC. Prod., x., 40. S. IBERICUM Stev. Alien, Caucasus. Hortal. In a wood at Gerrard's Cross, Bucks, Mrs PIGOTT, who showed it me there, but it had evidently come from an adjoining garden. It flowers in April.

506/10. MYOSOTIS VERSICOLOR Sm. Vestergren in Svensk Bot. Tids. Kr., 449, 1930, var. (as sub-sp.) LONGICALYX (Vester.). Caulis elongatus gracilis; calyx fructiferus viridis elongatus, laciniis angustis sublinearibus, apice acutatis elongatis tubo longioribus, pilis uncinatis longiusculis praesertim secus nervos valde prominentes armatus; corolla majusculo limbo circiter 3 mm. Tomatin, Inverness, G. SAMUELSON.

Var. (as sub-sp. FALLACINA (Jordan sp. Vester.). Humilis, saepe robustior; calyx fructiferus, atrocyaneus, brevior, circiter 4 mm. diam. longus, lacinius, latiuscula e basi latiore versus apicem, sensim attenuatis breviusculis 2 mm. longis e longitudine tubi nervis non prominulis pilis uncinatis minutis sparsis paramidis tantibus; corolla majuscula, limbo circiter 3 mm. in diam. ex luteo caerulescens Bath. C. C. Babington; Tomatin, Inverness, G. SAMUELSON.

Var. DUBIA (Arrondeau sp. Vester.). This is already in our List. Caulis elatus squarrosa hispidus. Tubus calycis acutus laciniis longior veliis demum aequilongus, secus nervos valde prominentes, pilis uncinatis robustis breviusculis crebris armatus, laciniis augustis versus apicem sensim attenuatis tubo brevioribus vel demum eo sub aequilongis; corolla minuta, limbo 1-2 mm. in diam. ex albo pallide caerulescens. Bath, C. C. Babington; Filby, Norfolk [N.182]; Montrose, Angus, G. C. DRUCE.

506/10. M. VERSICOLOR Sm., var. BREVICALYX Druce. Wicklow Sandhills, 1909; Watlington, Oxon, 1884; Teesdale, Durham, G. C. DRUCE; Abbey Wood, Kent; Bemridge Down, Isle of Wight, H. E. Fox. Calyx nearly as broad as long, sub-rotund and with lobes slightly longer, covered with strong and lengthy bristly hairs; corolla blue.

†509/1. ECHIUM VULGARE L., var. PUSTULATUM S. & S. Barry Dock, Glamorgan, 1930, G. C. DRUCE.

†509/6. E. ARENARIUM Guss. Alien, S. Europe. Burton-on-Trent, Staffs. A grain alien, G. C. DRUCE. From the Tavistock district of Devon, Miss BOGGIS.

†517/19. SOLANUM CHENOPODIOIDES Lam. ? Hayle, W. Cornwall, R. MELVILLE and R. L. SMITH.

518(2). CAPSICUM L.

†518(2)/1. C. ANNUUM L. Alien, tropics. Waste ground, Bristol, W. Gloster, C. & N. SANDWITH.

†525(2). SALPIGLOSSIS Ruiz & Pavon Prod., 94, t. 19, 1794.

525(2)/1. S. SINUATA Ruiz & Pavon. Alien, Chile. Waste ground, Exeter, S. Devon, G. C. DRUCE.

†529/4. CALCEOLARIA SINCLAIRIA Hook. Alien, New Zealand. Kirby Malzeard, Yorks, F. A. LEES MS.

†543/15. VERONICA DIGITATA Vahl. Sandal, Halifax, Yorks, F. A. LEES.

545/11. EUPHRASIA SEPTENTRIONALIS Druce & Lumb. *Planta* robusta. facie villosa, cinereo-viridis, longibracteata, parviflora, glandulosa. *Caulis* crassus, 3-8 cm. altus, satis strictus, nonnunquam simplex, saepe ramis binis oppositis nunc e basi nunc e medio nunc supra medium exorientibus, nonnunquam ubique ramosus, necnon ramis ipsis ramosis, ramis imis caulem principalem fere aequantibus, dense vestitus, pilis glanduliferis rectis subaequalibus satis paucis e cellulis binis elongatis glandulaque terminali plerumque compositis. *Spica* lata, internodiis brevibus, notis floriferis vel fructiferis plerumque paucis, nonnunquam usque 7. *Folia* inferiora ovata, obtusa, dentibus paucis satis obtusis, lobo terminali latitudine longitudinem excedente; superiora ovata, aliquantum obtusa, dentibus 3-4 magnis subacutis plus minusve acuminatis, infra valde plicato-striata, pilis longis copiose induta quorum nonnulli recti subaequales atque glanduliferi. *Bracteae* subdecussatae, patulae, nonnunquam conspicue deflexae, infra valde rugosae, indumento ei foliorum simili, late ovatae, nonnunquam longe ovatae, apice subacutae, basi latae, usque 10 mm. longae, 7 mm. latae, dentibus utroque margine 5-6 subacutis, lobo terminali longitudine latitudinem excedente, dentibus bractearum superiorum nonnunquam angustis acutisque sed haud aris-

tatis. *Calyx* bractea sua conspicue brevior, circum fructum haud accrescens, dentibus latis subacutis cum pilis multis rectis subaequalibus glanduliferis. *Corolla* parva, 5-7 mm. longa, albida, tubo haud elongato, stylo haud exserto. *Capsula* subtruncata, plerumque calycem aequans.

E. septentrionalis differt ab *E. hirtella* statura, pilis caulinis glanduliferis paucis, ramis, internodiis, bracteis, forma pilorum glanduliferorum. Ab *E. Rostkoviana* differt pilis caulinis glanduliferis paucis, forma pilorum glanduliferorum, bracteis rugosis, indumento glanduloso parciore, florum magnitudine. Ab *E. latifolia* differt bracteis basi haud sensim angustatis nec edentatis, lobo bractearum terminali, dentibus calycinis glandulosis (quod in *E. latifolia* rarissime fit).

B.E.C. Rep. 19[illegible] : 547 [illegible]

545/14. E. ATROVIOLACEA Druce & Lumb. *Planta* parva, valde ramosa, floribus calycibus bracteisque superioribus colore atro tinctis saepe glandulosis. *Caulis* gracilis, eglandulosus, pro maxima parte bracteis occultus, 2-4 cm. altus, inferne ramosus, raro simplex. *Spica* condensata, satis lata, internodiis paucis cernendis. *Folia* inferiora minima, mox caduca, crassa, integra vel utroque margine unidentata, nunc indumento longo *E. curtae* praedita, nunc fere glabra, saepe pilis brevibus glandulosis induta ; superiora minima, raro usque 5 mm. longa, infra rugosa, utroque margine bidentata, indumento simili. *Bracteae* inferiores suberectae, subacutae, circiter 5 mm. longae, infra rugosae, utroque margine plerumque bidentatae, nonnunquam tridentatae, dentibus acuminatis; superiores acutae, basi cuneatae, calycem plus duplo longiorem amplectentes, saepe pilis brevibus glandulosis indutae, nunc fere glabrae, dentibus acutis haud aristatis. *Calyx* semper bracteam suam superans, saepe copiose glandulosus, dentibus acutis vel subacutis, venis colore atro tinctis. *Corolla* circiter 6 mm. longa, tubo haud elongato, stylo haud exserto, parte superiore extra albida, ceterum solemniter atro-violacea. *Capsula* matura dentes calycinos aequans vel paullum superans.

Ab *E. curta* differt indumento plerumque minus denso, pilis glanduliferis, florum colore, bracteis parvis paucidentatis; ab *E. Lumbii* habitu, florum magnitudine necnon colore plerumque haud variabili, colore siccitate saepe nigrescente; ab *E. gracili* cum varietate ejus *primaria* habitu, magnitudine, indumento glandulifero; ab *E. brevipila* habitu, magnitudine foliorum bractearumque paucidentatarum, colore florum, caule eglanduloso; ab *E. foulaensi* nisi colore siccitate nonnunquam nigrescente toto caelo discrepat; ab *E. caerulea* habitu, magnitudine bractearum, indumento glanduloso et eglanduloso, colore florum differt.

545/17. E. LUMBII Druce, nom. nov. Rep. B.E.C., vii., 50. E. VARIABILIS Druce & Lumb, Rep. B.E.C., vii., 50, 1923, non Freyn in Kern. Sched., iv., 55, 1886. *Planta* gracilis facie depauperata, bracteis parvis, saepe subfarinacea atque glandulosa, valde variabilis. *Caulis* eglandulosus, gracilis, 2-6 cm. altus, nonnunquam simplex, saepe valde ramosus. *Spica* angusta, superne condensata, nodis floriferis vel fructiferis usque

12 sed saepe paucis, internodiis inferioribus satis longis. *Folia* inferiora mox caduca, obovato-cuneata, 7-8 mm. longa, basi anguste cuneata, utroque margine unidentata, lobo terminali longitudine latitudinem excedente; superiora ovata, basi cuneata, utroque margine dentibus 2-3 satis obtusis praedita, infra rugosa, indumento variabili vestita, pilis brevibus glanduliferis nonnunquam numerosis. *Bracteae* suberectae, plerumque satis parvae, circiter 5 mm. longae, ovatae, basi cuneatae, subtus conspicue rugosae, calycem amplectentes eoque saepe plus duplo minores, indumento ei foliorum simillimo; inferiores subacutae, dentibus utroque margine 2-3 subacutis; superiores indico tinctae, acuminatae, dentibus utroque margine 2-3 acuminatis subaristatis. *Calyx* bracteam suam semper superans, saepe copiose glandulosus, dentibus angustis acutis subaristatis, venis saepe indico tinctis. *Corolla* magnitudine valde variabili, 5-9 mm. longa, alba usque profunde lilacino-caerulea, siccitate plerumque haud ferruginea, tubo haud elongato, stylo nonnunquam exserto. *Capsula* matura dentes calycinos paullum superans.

Ab *E. campestri* differt caule eglanduloso, pilis glanduliferis brevibus, ramis, magnitudine atque colore florum variabili. Ab *E. Kerneri* pilis glanduliferis, florum colore, corollae tubo haud elongato, foliis bracteisque rugosis, crassitis; ab *E. gracili* cum varietate ejus *primaria* magnitudine florum, ramis foliis bracteisque rugosis, pilis glanduliferis, colore totius plantae; ab *E. caerulea* habitu, magnitudine bractearum, colore florum differt.

545/19. E. ROSTKOVIANA Hayne, var. MINORIFLORA Borbas. Ballyvaghan, Co. Clare, 1930, P. B. O'KELLY. Very exceptionally robust and most densely glandular. Stem nearly 40 cm. Glandular hairs often with six elongated cells.

550/3. OROBANCHE ALBA Steph., var. BIDENTATA G. Beck Mon. Orob., 211, 1890. Insula, Skye, Beck in Engler Pflanzenreich. Flores 20 mm. longi. Calycis segmenta omnium vel plurimorum flore profunde et saepe inequaliter bidentata. Bracteae flore longitudine aequales vel breviores. Filamenta infra glabra, supra parce glandulosa—pilosa vel glabra. In the type filamenta infra pilosa supra glanduloso-pilosa.

Order 67(2). PEDALIACEAE Lindl. Nat. Syst., ed. 2, 281, 1836.

†553(2). MARTYNIA Houston ex L.

†553(2)/1. M. LOUISIANA Miller. M. PROBOSCIDEA Gloxin. Alien, America. Meanwood Valley, Yorks, 1903, F. A. LEES.

563/1. CLINOPODIUM VULGARE L., var. OVATA (Briq.). Sapperton Tunnel, E. Gloster, G. C. DRUCE.

561/10. THYMUS NEGLECTUS × PULEGIOIDES, var. CHAMAEDRYS = T. JACKSONII Ronn., nov. hybr. Differences distinguishing it from *T. Pulegioides*, var. *Chamaedrys*. Stem long, procumbent; the flowering shoots raise themselves from the ground only just behind the inflores-

cences, and are not sharply quadrangular; they bear hairs in two series, rarely in four series—the lower part of the stem is also covered, even where glabrous, with minute papillae. Calyx densely villous all over. Leaves small, 5-6 mm. long, 2-3 mm. broad, ciliate in the lower third or half, rarely 9 mm. long or 5 mm. broad.

Differences distinguishing it from *T. neglectus*. The sterile shoots are less numerous, only a few being present. The leaves, which are of delicate structure, are broader than those of *T. neglectus*, and are ovate or ovate-lanceolate, the nerves not projecting. The flowering shoots frequently branched. First record: Churn, Frilford Heath, Brimpton, Berkshire, 1930, G. C. DRUCE.

Named after A. Bruce Jackson, who has studied the genus *Thymus*. See *Journ. Bot.*, xlvi., 33, 1908, Karl Ronniger.

569/6. NEPETA HEDERACEA (L.) Trev., var. MAJOR Gaud. (MAGNA Mérat). Basildon, Berks, 1929, G. C. DRUCE. Feuilles toutes reniformes; glomerules 1-2 flores; fleurs grandes; calice relativement plus long que dans var. *typica* et *heterophylla*; plante velue, souvent une fois plus grande dans toutes ses proportions que *typica* et *heterophylla*.

†577/12(2). STACHYS COCCINEA Ortega. Alien, Cuba. Martin Mere, S. Lancs, 1930, A. G. LANGDON, ex F. W. HOLDER; Liverpool Docks, 1909, *Hb. Ellis*, teste R. WAGSTAFFE.

585(2). AMETHYSTEA L.

†585(2)/1. A. CAERULEA L. Sp. Pl., 21. Alien, Siberia. Waste ground, Bristol, W. Gloster, C. & N. SANDWITH. In appearance quite unlike one of the Labiatae. Covered with a metallic, blue-green sheen.

†592/4. PARONYCHIA ARGYROMA Nutt. Alien, N. America. Fryinghall, Yorks, RHODES, ex F. A. LEES.

†596/11. AMARANTHUS ASCENDENS Loisel., vel var. POLYGONOIDES (Moq.) Thell. Alien. St Helier's, Jersey, Bro. LOUIS ARSENE.

†596/14. A. GRAECIZANS L. Alien. Yiewsley, Middlesex, 1929, R. MELVILLE.

600/15. CHENOPODIUM POLYSPERMUM L., var. (vel f.) AMARANTOIDES (Beck.). Mortimer Pond, Berks, 1930, G. C. DRUCE.

†600/18(2). C. TRIANGULARE R. Br. Alien, Australia. C. PANICULATUM Murr. Bradford, Yorks, G. C. DRUCE and J. CRYER.

†606/4. ATRIPLEX CALOTHECA Fries. A. HASTATUM Lindm. Sv. Fl. and of Fries Fl. Hall., 49. ? Ayr, 1930; Dunbar; Wigtown, 1930, G. C. DRUCE. These approach the Continental species much more closely than any others I have seen, and Dr Aellen has queried them as this plant.

It differs from *hastata* by the calyx being deeply cut into narrow segments. It is a native of Scandinavia. It may be mentioned that all Mr Bennett's records of it in *Journ. Bot.* and the *Annals of Scottish Natural History* are errors for *hastata*. More recently he has named an *Atriplex glabriuscula*—var. *pseudo-calotheca* Ar. Benn. in *Trans. Bot. Soc. Edin.*. 61, 1828, from the coast of Caithness at Reiss. I had gathered similar plants in Wigtown in the eighties, but they are quite different from the true *calotheca*. Both my plants referred to above may be of adventive origin.

651/9. POPULUS BALSAMIFERA L., non CANDICANS Ait. Det. Fraser. Alien, N. America. A few trees by the river between Killin and Crianlarich, M. Perth, August 1930, G. C. DRUCE.

652/2. EMPETRUM HERMAPHRODITUM Hag. On Y Gribin Bwlch y Ddwy Glydyr, Carnarvon, C. G. TRAPNELL; Slioch, W. Ross, G. C. DRUCE. Mr Trapnell writes:—"I am shortly sending confirmed *Empetrum hermaphroditum* Hag. and associated *E. nigrum* L., under separate cover. Dr Hagerup tells me he regards these two names as covering what are probably two groups of smaller races, *i.e.*, as two aggregate species. My *E. hermaphroditum* answers to the arctic-alpine type of North Europe and Greenland, whose characters are well marked. This Welsh site probably represents the southern limit, with the exception of the European Alps. This type is cytologically as well as morphologically distinct from the dioecious *E. nigrum* of boreal Europe."

669/7. ORCHIS INCARNATA L., nov. var. PLANIFLORA Dr. Differs from the type in the flat, not reflexed, labellum. Labellum planum, non reflexum. Durnford, Cambridgeshire, shown me by Messrs CARTER and GILSON.

669/9. O. PURPURELLA Steph. P. Vermuelen, Ned. Krindkundig Arch., January 1930, gives an account of this Orchid growing in Holland.

669/12. O. O'KELLYI Dr. Askham, Yorks, W. A. SLEDGE; Ivinghoe, Bucks, Mrs MACALISTER HALL. Very plentiful on the Burren, Co. Clare. Under this, provisionally, I put a pink-flowered plant from the Burren area, Co. Clare, which keeps uniformly distinct. Mr O'Kelly thinks it is a distinct species, but to me, with a limited means of investigation, it seems most fitting to put it under *O'Kellyi* as var. *purpurascens*. It does not resemble *Fuchsii*. Flores roseae-purpureae. Flowers small, labellum three-lobed, middle one pointed, somewhat smaller than the lateral lobes, of a purplish colour.

676/2. IRIS FOETIDISSIMA L., var. CITRINA Bromf., f. PELLOTTII Ab.-Anders. Langton Matravers, Dorset, Sir M. ABBOT-ANDERSON.

A variety with yellow seeds was sent from the Isle of Purbeck by W. VAN DE WEYER.

†676/10. I. VERSICOLOR L. Alien, N. America. Hortal. Tagbeck, Yorks, F. A. LEES, teste DYKES.

†706/7. SCILLA PERUVIANA L. Bot. Mag., t. 749. Alien, Reg. Medit. Hortal. On a hedgebank in the parish of S. Mervyn, W. Cornwall, W. WISE. Introduced into Britain in 1607. Linnaeus made an error in giving it the name *peruviana*, with which country, certainly, it has nothing to do.

718/10. JUNCUS ARTICULATUS (LAMPROCARPUS) × NODULOSUS =× J. BUCHENAUI. Teesdale, 1930, G. C. DRUCE.

718/11. J. NODULOSUS Wahl. in Britain. Under the major species *alpinus* Vill., B. Lindquist of Upsala is monographing three subspecies—*J. alpinus* Vill., which Mr Sprague (*Journ. Bot.*, 210, 1928) shows is a nomen abortivum, and holds that the valid name is the uncouth *J. alpino-articulatus* Chaix Hist., i, 378, which is based on *Juncus foliis fistulosis, articulatis, panicula simplici, glumis aristatis* Haller Hist., ii., 170, 1768. Villars (*Hist.*, ii., 233) rejected the name of Chaix and wrongly gave another—a more expressive one, *i.e.*, *Juncus alpinus*, with which name our British plant apparently has been wrongly identified.

The second plant is our British species, *Juncus nodulosus* Wahl. Fl. Suec., i., 114.

The third, *J. atricapillus*, which I have vainly sought for, is not yet known as British.

J. nodulosus is also the common plant of Sweden and Norway. The true *mucroniflorus* Clairv. also occurs there=(*alpinus* and *alpino-articulatus*). The latter I have gathered plentifully near Le Lautaret in the Dauphiny.

Juncus nodulosus was first made known as a probable British species by W. H. Beeby in *Scot. Nat.*, 92, 1887, as having been found by Mr HUTCHESON in Glen Dole, Angus, in 1870. Buchenau reported on it as being *alpinus* or one of the intermediates between *alpinus* and *lamprocarpus*. In August, 1887, Dr Buchanan White found it at Pitlochry, E. Perth, and I found it near Loch Ennich, Easterness, in the July of that year. In 1903 I found it at Teesdale, Durham, and again in 1909, when I showed it to Dr Lees. He entered it at the time in his copy of my "List of British Plants," and also added that he had afterwards found it on the N.W. slopes of Mickle Fell, Yorks. I have seen it repeatedly near Widdy Bank since that date, and specimens are distributed this year. Lindquist of Upsala, in July 1931, said the 1909 gathering from Teesdale was among the best he had seen from Britain, and that it was *nodulosus*.

Other localities are:—Vol.i., B.E.C., 387, 1892. Loch Ussie, E. Ross, E. S. MARSHALL, August 8, 1892, named by Buchenau as forma *gracilior*.

B.E.C., 423, 1893. Ben Laiogh, Argyll, at 2500 ft., as var. *genuinus*, E. S. MARSHALL, agreed to by Buchenau.

[Vol. ii., B.E.C., 398. Shore of Loch Assynt, W. Sutherland, July 1908, W. A. SHOOLBRED and E. S. MARSHALL. Not this species but form of *articulatus.*]

Vol. iii., B.E.C., 218. Loch Greenoch, Kirkcudbright, 1910, G. WEST.

Vol. iv., B.E.C.* Near Cromer, Norfolk, E. VACHELL, named by A. Bennett who (in *Top. Bot. Add.*) erroneously put the record to Glamorgan.

[Vol. vii., B.E.C., p. 899. Mail Gruaidh, M. Perth, Miss TODD. Aberfeldy, M. Perth. Hon. Mrs CAMPBELL. These are very young and possibly *articulatus.*]

In 1st Suppl. to Top. Bot. Bennett gives:—41. Glamorgan [Error. Should be 27. E. Norfolk], VACHELL. 87, 88, 89. Perth, B. WHITE. 96. Easterness. Glen Ennich, July 1887, Druce in Ann. Scot. Nat. Hist., 122, 1894. 98. Argyll, MARSHALL, 1893. Ben Laiogh, 2500 ft.! 101. Cantire, SOMERVILLE. 106. E. Ross, MARSHALL. See above. 108. W. Satherland, MARSHALL. (Needs verification.)

In the 2nd Suppl. is added:—73. Kirkcudbright, WEST. See above. 109. Caithness, LILLIE sp.

In the Flora of Perthshire, 296, 1898, Buchanan White wrote " new to Scotland, August 1887, near Pitlochry, Killin, and Blair Atholl," Scot. Nat., iii., 182-184. He also adds: Meall na Saone 88 and Glen Shee, E. Perth 89, MARSHALL.

718/16. J. MACER S. F. Gray Nat. Arr. ii., 164, 1821. JUNCUS TENUIS Willd. Sp. Pl. ii., 214, 1799. J. BICORNIS Michx. Fl. Bor. Am. i., 191, 1803. J. GRACILIS Sm. E. B., 2174, 1810, non Roth, 1788. Tufted, rather low, bright green; culms 2-6 dm. high, commonly spreading, slightly flattened and finely striate, often stout; leaves long, one half to nearly the full length of the culm, narrow (1-1.25 mm.), lax, flat and soft, rarely slightly involute; sheaths all blade bearing, short, loose and often expanded, greenish-brown, margins and the large extended auricles (often 1.5 mm. long) very scarious; inflorescence pale green, many flowered, moderately open (1-7 cm. long); flowers somewhat aggregated near the ends of the very unequal branches; bracts 2, rarely 3, foliaceous, much exceeding the inflorescence; bracteoles triangular-ovate, acutish; perianth variable in size (3-4.5 mm. long), parts all nearly similar but the inner slightly shorter, lanceolate, very acute, green with white scarious margins, conspicuously spreading; stamens one half the length of the perianth; anthers short, oblong, much shorter than the filament; capsule thin-walled, broadly ovoid, shorter than the perianth, obtuse, very obscurely triangular above, scarcely apiculate; placentae not reaching half way to the axis; seeds (.33-.40 × .14-.17 mm.) oblong, bluntly apiculate at each end, reticulated, areoles large, transversely oblong. WIEGAND in *Bull. Torrey Club*, xxvii., 522, 1900. Dry roadsides and grassy places, Newfoundland to Florida and westward to Texas, north-westward to Oregon and Washington. The more diffuse habit, scarious auricles, many flowered inflorescence with flowers mostly near the end of the branches, spreading sepals and thin-walled, one-celled capsule make *J. tenuis* a very distinct species indeed. . . . It is, however, very variable, and future study may result in separating several more good species. *J. macer* was first recorded from Britain by George Don. He found it by the side of a rivulet in marshy ground among the mountains of Angus in 1795 or 1796. Smith, in *Eng. Bot.*, t. 2174, named it *tenuis* (a name already used by Brown and by Roth). Therefore, in *Eng. Fl.*, ii., 167, 1824, he re-named it *J. Gesneri*, overlooking or ignoring S. F. Gray's name of *J. macer* of 1821. It is represented as *J. tenuis* in Don's own private Herbarium in my possession, where he says it is limited to the Clova mountains. Fernald's statement that " most of the rare species recorded by Don have been refound " must be somewhat discounted. Many have, but not, among others, *Ranunculis alpestris, Potentilla tridentata, Tussilago alpina, Arenaria fastigiata, Phleum Michelii, Juncus macer* (from mountain summits), *Silene alpestris, Crepis pulchra, Hierochloe borealis*, and *Triticum cristatum.* In Don's account of the plants he found in Forfar (Headrick Agric. Forfar) he includes *J. tenuis* from the summits of the Clova mountains. My own Herbarium has specimens from:—6. Somerset, N., Leigh Wood. 14. Sussex., E., Uckfield. 22. Berks, Wellington College, MONCKTON. 34. Gloucester, W. 48. Merioneth, Barmouth, BARTON. 58. Cheshire, Sale, HOLT. 64. Yorks, N.W., High Bentham, WEST. 73. Kirkcudbright, Galloway. 76. Renfrew, Bridge of Weir, EWING. 88. Perth, M., Glen Falloch, Glenogil. 89. Perth, E. 90. Angus, Clova, DON, 1795. 97. Westerness, Loch Laggan. 98. Argyll, near Dalmally, etc., MARSHALL. Kerry, Clashganned, SCULLY. 38. Down, Belfast, WADDELL.

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*The exact station is uncertain. Wales, rather than Norfolk, is the more probable.

†718/16(2). J. DUDLEYI Wiegand. Pale green; stems tufted, often very large and stout, 3-10 dm. high, stiff, erect and wiry, prominently striate-grooved; leaves short, one half the length of the culm or usually less, narrow but flat, frequently involute; sheaths rather close, all blade-bearing, margins not scarious; auricles rounded, thick and cartilaginous, yellowish or reddish in colour; inflorescence small and rather dense, 2-5 (rarely 7) cm. long, few-flowered, exceeded by the short filiform 4-8 cm. long bract; flowers contiguous at the ends of each branchlet, not at all secund, green or pale-stramineous; bracteoles ovate, obtuse or acutish; perianth 4-5 mm. long, the parts firm, nearly equal, lance-subulate, acute, strongly spreading, yellowish-green with a distinct scarious margin; stamens one half as long as the perianth, anthers oblong, slightly shorter than the filaments; style very short; capsule broadly ovate-oval, $\frac{3}{4}$-$\frac{7}{8}$ the length of the perianth, rounded, apiculate and very obscurely triangular at the apex, placentae reaching half-way to the axis; seeds oblong (.37-.45 × .17-.21 mm.), apiculate at each end, coarsely areolate with 5-7 rows of transversely oblong areoles. K. W. WIEGAND in *Bull. Torrey Club*, xxvii., 524, 1900.

Damp neutral, not acid, soil in open places, from Maine and New York, westwards to the Saskatchewan, Colorado and Arizona.

The cartilaginous brown auricles, stiff stem and small contracted inflorescence with spreading calyx distinguishes this species from all others of the group. It is extremely variable in size although the floral characters are constant. In Britain it is an alien from N. America. Prof. Fernald detected it in Herb. Kew. C. E. Salmon, with Mrs Wedgwood, had collected it as *tenuis* from a marshy spot by roadside, Crianlarich, M. Perth. *J. macer* also grows there.

737/2. POTAMOGETON OBLONGUS Viv. (POLYGONIFOLIUS auct.) Carron, near Ballyvaghan, Co. Clare, sent me by P. B. O'KELLY.—G. C. DRUCE. Forma PARVIFOLIUS (sub *polygonifolius*). Folia natantia parvissima (10-25 × 5-15 mm.). W. H. PEARSALL, May 16, 1930, *in litt.* "This is very interesting. I have only once before seen a similar form with small leaves, as small and typical as these, from Perth. Forma *pygmaeus* Gaudin is a similar *natans* form, but with larger leaves than these."—W. H. PEARSALL.

Var. PARNASSIFOLIUS (Schrad.). P. POLYGONIFOLIUS, var. PARNASSIFOLIUS Gren. = var. ANGUSTIFOLIUS Fries. Carron, near Ballyvaghan, Co. Clare, 1930, P. B. O'KELLY. Named by W. H. Pearsall. Also from Zetland where I found it at Tingwall in 1922.

747/4(2). ERIOPHORUM OPACUM (Björnstr.) Fernald Rhodora, vii., 85, 1905; xxvii., 208, 1925. Lindman Svensk Fanerogamfl., 112, 1918. E. VAGINATUM OPACUM Björnst. Grunddr. af Pitea Lappm. Växtfys., 35, 1856. Fries Bot. Not., ii., 1857. E. CALLITRIX Anderss. Bot. Not., 60, 1887, not of Chamisso. (E. Siberia, N. America). In *Journ. Bot.*, 8, 1931, Prof. Fernald recounts his discovery of this plant in the wet peat along rills descending from the northern slopes of Ben Eigh. It is a more graceful plant than *vaginatum*, having tall capillary culms, and small "top-shaped" fruiting heads, growing in small tufts of one to very few culms (so does *vaginatum* in certain cases); culms terete or sub-terete, up to 7 dm. high, with the bladeless upper sheath light and scarcely inflated; flowering spike globose-obovoid, barely 1 cm. long, in fruit becoming turbinate and 1.5-2.5 cm. long, spathe lanceolate or lance-ovate, scales lead-coloured or blackish throughout (is this not often so with *vaginatum*?), anthers 1-2 mm. long. . . . pits of mature denuded rachis opening divergently outward. It seems a reproach to British botanists that this plant was not discovered before, but *callitrix* (*opacum*) is a critical species, and starved *vaginatum* plants come very near it. I have climbed Ben Eigh several times, but when I was there, it was jealously guarded by a curmudgeonly sportsman, and I only managed to be on it from the southern side by choosing a misty day—there was not much difficulty in that—and getting into a stream which flowed from the southern side, ascending by that to the summit. There I got a new variety of *Agrostis canina*, which Hackel named *scotica*, and several good *Hieracia*, but I never got on the northern slopes. I have only Swedish and Norge specimens in my Herbarium, and they are not easy to differentiate from *vaginatum*. The non-inflated bladeless upper-sheath seems a good character. But one has to make its acquaintance and study it in the field. It is a new British species.

747/5. ERIOPHORUM ALPINUM L. In the "Extinct and Dubious Plants of Great Britain," I have thus treated it:—"Discovered by Mr Brown and Mr Don in a moss about three miles east of Forfar."—*Trans. Linn. Soc.*, ii., 290, 1794. "First found by Robt. Brown and G. Don in Aug. 1791, see spec. Now destroyed by dredging for marl and subsequent flooding. It lingered till 1813."—Arth. Bennett *in litt.* [? 1790, Teesdale in Herb. J. Dalton.] "A specimen of *E. alpinum* exhibited by Dr Balfour said to have been picked by him with Prof. Graham in Aug. 1827 at Durness, Sutherland. It had been put among specimens of *Scirpus caespitosus.*"—*Bot. Soc. of Edin.*, Jan. 10, 1850. See *Bot. Gaz.*, ii., 52, 1850. Balfour was then only 19 years of age and evidently did not recognise it at the time and the specimens may have been accidentally mixed. North margin of Gurthambra Lake, three miles west of Mill Street, Co. Cork, H. J. Ryder, 1866, but A. G. More was unsuccessful in a search in 1868 and so was D. Moore in 1869. Banlinamoor, Ireland, Forbes Young in Hb. Brit. Mus. See Syme *Eng. Bot.*, x., 71.

The year 1813 seems to have been its last appearance at Restennet.

Prof. Fernald (*Journ. Bot.*, 8, 1931) records its discovery "along one rivulet on a heathy and peaty slope to the north east of the Kinlochewe Hotel, N. Ross." The specimen, after examination, was thrown away. *E. alpinum* is abundant in Newfoundland, Eastern Canada, and much of New England. We may also say it is common in some parts of Sweden, Norway, and Switzerland, where, however, it is not confined to the sides of rivulets. It cannot be very common as in my frequent visits to West Ross it would have been noticed. I have never been on the particular moor where Fernald found it, but I think Salmon worked it very carefully some years ago. I visited many acres of the Flowerdale and Torridon peat in 1928, but although I found *Carex limosa* and many other species, including heaps of *Scirpus caespitosus*, I saw no *Eriophorum* other than *latifolium* and *vaginatum*. As I have said, Salmon worked Fernald's valley, and added two or three West Ross plants from it. This discovery of Fernald's brings again under consideration the Durness locality. Certainly it is a slap in the face for me, for I have worked very hard in Ross-shire. Owing to its size and mountainous character, I acknowledge it to have been only superficially examined. It is a sad disappointment that no specimens were kept.

Prof. Fernald uses the novel name *Scirpus Hudsonianus* for this plant, but if it is worth separating from *Eriophorum*, which is its natural affinity, I should follow the Continental authorities and put it near *Scirpus* (*Trichophorum*) *caespitosus*.—G. C. DRUCE.

†754(2). ERIOCHLOA H. B. K. Nov. Gen. et Sp., i., 94, tt. 30, 31, 1815.

754(2)/1. E. VILLOSA Kunth Rev. Gram., i., 203, t. 13. Alien. Eastern Asia. Avonmouth, W. Gloster, September, C. & N. SANDWITH.

†762/2. ELEUSINE COROCANA Gaertn. Alien, N. America, Egypt. Frizinghall, Yorks, F. RHODES.

†776/24. FESTUCA BUCHTIENII Hackel in Fedde Rep., vi., 160, 1908. Alien, Bolivia. Selkirk, September 1918, Miss I. M. HAYWARD, det. Dr SCHINZ.

792/1. HOLCUS MOLLIS L., var. MINUTA Dr. Plant small, 7 cm. Panicle few-flowered, 10 mm. Spikelets 2.5 mm., two-awned. Holyhead Mountain, Anglesey. Planta minima, 7 cm., pauciflora; flores biaristata. The var. *parviflorus* Parnell is a larger plant with more numerous spikelets. It resembles *Aira praecox*.—G. C. DRUCE.

†794/5. AVENA STERILIS L., var (sub-sp.) OLEODENS (Marq.). Cardiff, Glamorgan, E. VACHELL.

824/2. POA PRATENSIS L., var. MINOR Wahl. Southport, S. Lancs, F. W. HOLDER and G. C. DRUCE, teste H. SCHINZ.

Var. MACROSTACHYA Schur. Det. E. SCHMIDT. Aberdeen Golf Links, 1928, Miss TODD.

827/19(2). BROMUS BRITANNICUS I. A. Williams. On August 18, 1929, I sowed three batches of seeds of this species, some in almost pure sand in full sun, some in sandy peat in full sun, and others in sandy peat in shade. The seedlings were all about 1¼ inches high seven days after sowing, and by the end of September were about four inches high, at which they remained during the winter. They were in full flower by the middle of June and the first seeds ripened during the first week in July. I examined a large number of these plants and found that they all showed the distinguishing features clearly. As a result of the variation in the conditions under which they were grown, those in full sun flowered much more freely, and those in sandy peat in full sun produced, on the average, larger and more branched panicles. This year (1930) I found fair quantities of this grass in the Dorset districts of Pool, Blandford, Stourpaine and Wool. From each of these all the plants examined had the specific characters well marked. L. B. HALL.

†827/30. B. ARENARIUS Labill. B. AUSTRALIS Br. Alien, Australia. Oxley, Leeds, Yorks, F. A. LEES.

†829/4. LOLIUM MULTIFLORUM Lam., var. GAUDINI (Parl.) Rouy. "Plante moins robuste; épillets 10-15 flores, rarement 5-10 flores; glume égalant la ½ long. de l'épillet." Alien, Burton-on-Trent, Staffs, 1930, G. C. DRUCE, det. Dr SCHINZ.

830/4(2). AGROPYRUM INTERMEDIUM P.B. Agrost., p. 146 (1812); A. GLAUCUM R. et Sch., Syst., 2, p. 752 (1817); Reichb., l.c., t. 21, f. 1389; G. et G. Fl. Fr., 3, p. 607; Husnot, l.c., p. 82; A. RIGIDUM Presl Fl. Cech., p. 28 (1819); TRITICUM INTERMEDIUM Host Gram. Austr., 2, p. 18, t. 22, 3, p. 23, in obs. ad T. JUNCEUM (1805), Fl. Austr., 1, p. 180; Asch.

et Fr., l.c., p. 654; T. RIGIDUM Schrad. Fl. Germ., 1, p. 392 (1806), pro parte; T. GLAUCUM (Desf. Cat. H. Paris, ed. i., p. 16, sed nomen nudum) DC. Fl. Fr., 5, p. 281 (1815), et T. RIGIDUM var. a DC., l.c., p. 282; T. TRUNCATUM Wallr. in Linnaea, 14 (1840), p. 544; T. REPENS b. GLAUCUM Celak. Prodr. Fl. Böhm., p. 55.—Exs.: Reichb., 1802; Guebh. Mold., 467; Dauph., 5693.—Souche rampante, émettant des stolons allongés. Tiges de 4-15 déc., robustes, dressées, raides, non fasciculées. Feuilles glauques, d'abord planes puis tôt enroulées-subulées, rudes et glabres à la face sup., à nervures saillantes et contigués à l'état sec chacune portant une rangée de petites pointes. Epi dressé, raide, allongé, non tétragone mais largement linéaire, ± lâche; rachis rude. Epillets grands, distiques, 3-5 flores, plus longs que les entrenoeuds mais ± espacés. Glumes dépassant la 1/2 long. de l'épillet, elliptiques, très obtuses et largement et obliquement tronquées, ordinairement mutiques, à 5-7 nervures saillantes, séparées par des sillons verts et profonds, la nervure med. atteignant seule le sommet. Glumelles égales: l'inf. lancéolée, obtuse et ordinairement mucronulée; la sup. scabriuscule sur les carènes.—Juillet-août.

Europe centrale et mérid.; Asie austro-occid. et centrale. Rouy & Fouc., xiv., 323. Near the River Colne, Colchester, Essex, 1929, G. C. DRUCE. Richter (*Pl. Eur.*, 124) puts it under *A. glaucum* (Desf.) R. & S. with Presl's *caesium*. It is near to *caesium* Presl, but differs in the absence of hairs on the rachis. It is doubtless native. G. C. DRUCE.

851/4. ASPLENIUM LANCEOLATUM Huds. Journ. Bot., 247, 1830. This well-known name must disappear. The older species name for it is that given by Viviani in *Fl. Lib. Spec.*, 68, 1844. *Lanceolatum* of Hudson, 1778, is already used by Forskal in 1775. Our plant must stand as *Asplenium obovatum* Viv., l.c. Fl. Cors., 184, emend Becherer. Then the var. *microdon* (Moore) nov. comb. must be placed under *obovatum* Viv.—G. C. DRUCE.

857/2. CYSTOPTERIS REGIA L. = C. ALPINA Desv. This has been well and clearly discussed by Dr Stansfield and others in the British Fern Gazette for 1930, p. 36. It was found at 2800 metres on the Dolomites by Schroeter, and is *alpina*, teste Paul Kestner.

Of course, it has long been extinct at Low Leyton, Essex, where it was an escape or planted. Backhouse's material is in the Kew Herbarium, but the specimens are very poor, although correctly named. The old locality was given as " Falcon Clints, between Widdy bank and Cauldron Snout." I searched for it unsuccessfully in 1903 and in 1909 with F. A. Lees. I followed the old grouping in Hayward's " Botanist's Pocket-Book," in treating it as a var. of *fragilis*, but the grades are of higher value in that work than in the more recent critical floras. The place, Dr Arnold Lees told me, was near the White Force, on the Yorkshire side of the Tees, and also in a dry valley on the east side of the Tees, but I have utterly failed in getting confirmation. I think *Dickieana* is a distinct species.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1930.

(Owing to exigencies of space and the erratic receipt of foreign works this is necessarily incomplete.)

AELLEN, P. Gehört *Chenopodium suecicum* Murr der Schweizer Flora an Schweiz. Bot. Ges., xxxix., 1930.

Em Neues *Chenopodium helenense*, von St Helena. Fedde Rep., xxvii., 1930. At Longwood, St Helena, 1819, Burchell in Hb. Kew.

ALMQUIST, ERNST. Zur Artbildung in der Freien Natur. Acta Hort. Bergiani, band 9, No. 2. This gives a fuller account of *Capsella Hegeri*.

Studien über *Capsella Bursa-pastoris* (L.). ii., *l.c.*, band 7, No. 2. With sixteen photographs and descriptions of a large number of species and drawings of the fruits of new species.

APOLD, JOHS & ROLF NORDHAGEN. Neue oder seltine adventivpflanzen aus Hardanger. Bergens Mus. Arbok, No. 3, 1930. There are over 30 species chiefly from Odda, including the ubiquitous *Matricaria discoidea*. The name *Radicula islandica* supersedes that of *R. palustris*, which I too saw at Odda some years ago.

BECK-MANNAGETTA, DR GUNTHER. DAS PFLANZENREICH. Heft 96, iv. 261. Wilhelm Engelmann, Leipsic, September 1930; 55/-. OROBANCACEAE Lindl. Pp. 348, tt. 24. In this excellent work, Dr Beck-Mannagetta has described the various species of this curious family. He has given a very elaborate list of authors cited, the Characters, Vegetation, Organe, Anatomische, Verhältnisse, Bluten Verhältnisse, Bentanburg, Frucht & Same, Geographische, Verbreitung, Naturpflanzen und Kultur, etc. He divides the family into fourteen genera, of which only two are British. It may be added that *Phelypaea* is kept as a distinct genus and does not include the blue-flowered species, *O. purpurea*. 99 species are enumerated and well described. Treating of those which are British, the following notes are suggested.

1. OROBANCHE RAPUM-GENISTAE Thuill. is adopted as in the List, the name *major* L. being properly reserved for *O. elatior* Sutton. He does not give *Ulex* as a host, though it is so in Anglesey, etc., nor does he cite Anglesey, Jersey, and many counties. Pulverbach in Salop is really Pulverbatch. Seven forms are given and three varieties, the latter including *bracteosa* (Reuter) Beck, which has broader bracts, twice as long as the larger flowers. Bennett gives this for Llandovery, found by H. H. Knight, but it is not cited in the Monograph.

2. O. CARYOPHYLLACEA Sm. is chosen instead of *O. vulgaris* Poir., which was adopted by F. N. Williams, and is used in our List. Under it he has four varieties and sixteen forms, but none appear as British. A locality for *caryophyllacea* is given "In der Grafschaft Argyll, Loch Nell, Herb. Harvey," which has not been noticed hitherto in our floras.

3. O. ALBA Steph. (as in our List) = O. EPITHYMUM DC. with five varieties and twenty-two forms, our British plant being forma *rubra* (Hook.) Beck. He also gives var. *bidentata* G. Beck Mon. Orob., 211, 1890, as found in Scotia, Insula Skye, " forma *albescens*, flores 20 mm. longa."

4. O. MAJOR L. (O. ELATIOR Sutt.) as in our List. This is the plant of the Sp. Pl., 632, 1753, and is the *O. major* L. Fl. Suec., 219, 1755 (non Herb.). Many British localities are included. His Oxford " Sommerton " is really Summertown. Eleven forms are described, including our Channel Island plant *Hypochaeroides*. He does not allude to the pale yellow-flowered form which is not *Hypochaeroides*.

5. O. RITRO Gren. & Godr. is reduced to a form of *major*.

6. O. RETICULATA Wallr. is used as in our List. I first identified this as British from specimens sent from York (*Rep. B.E.C.*, 335, 1908), by Mr Craven, growing on *Cirsium Eriophorum* Scop. Mr Knight is cited for it from Llandovery. Three varieties and eight forms are described, but he does not quote England under *O. reticulata*, var. *procera* Druce, Journ. Bot., 110, 1909, nor Brecon under the var. *pallidiflora* (W. & G.), for which Dalmatia alone is cited.

7. O. HEDERAE Duby. This has been seen on a host plant not given by Beck—a *Pelargonium* species. Of this, seven forms are described. The var. (or forma) *monochroa* has been seen in Sark, etc., but it is not given for Britain.

8. O. PICRIDIS F. Schultz, with a variety and two forms.

9. O. AMETHYSTEA Thuill. This also occurs in Jersey and Guernsey, and there is no doubt it is a British plant. It is not confined to *Eryngium*, but also grows on *Daucus*. It has five varieties and four forms.

10. O. MINOR Sm. Our commonest species has a var. *concolor*, and fourteen forms, of which *conciliata* is cited. The var. *concolor* is not given as British.

11. O. SPECIOSA DC., 1815, non Dietrich. The name *O. crenata* Forsk., 1775, is adopted and Bridgwater is given as its habitat. It was abundant in Cyprus.

12. O. PURPUREA Jacq., with nine varieties and six forms, is kept among the Orobanches, *Phelypaea*, under which it is sometimes placed, being kept as a distinct species. Beeston Regis is cited for Notts. but it is in Norfolk, as is North Repps, which is correctly cited for that county. *O. arenaria* Borck., from the Channel Islands, which we disregard as British on present information, has ten forms given under it. Beck cites Babington for it and " doch halt Bennett fraglich," but it cannot be accepted.

13. O. RAMOSA L. This, which is an alien with us, includes six forms. It is now well nigh extinct in Britain as there is so little hemp cultivated.

Under LATHRAEA SQUAMARIA L. four forms are described. There is no allusion under *L. Clandestina* L. to its being naturalised in England.

The publication of this Monograph is especially welcome, since Dr Beck's Monograph in the Bibl. Bot. is now difficult to procure, and this gives his latest views on a difficult Family.

Blom, Carl. Ullfloran vid Lachalänga i Skane. Satryck ur Medd. Fran. Goteborgs Bot. Trädg., v. 85-96, 1929. This gives a list of adventive species, 30 S. American, 11 S. African (Cape), 11 Australian, 4 N. American, 5 Tropical, 12 Cosmopolitan, and 33 from other parts of Europe. Among them are *Senecio lautus* and *Chenopodium hircinum*, as at Galashiels.

Bower, F. O., LL.D., F.R.S. Size and Form in Plants, with Special Reference to the Primary Conducting Tracts. Pp. 232, tt. 25, fig. 72. Macmillan & Co., London, 1930; 12/6. The contents of this handsome volume was given as an address to the members of the British Association by its President on the occasion of the Bristol meeting, when I had the pleasure of sitting close by him and hearing the somewhat highbrow address. The subject had already been treated of by Sachs in his Essay on Flora of 1893. The phenomena treated in this work all spring from that trend towards increase in size which is common to a greater or less degree in all living things. Anyone who knows Prof. Bower will realise how he revelled in his researches on the subject, and will understand how firmly he stepped even upon doubtful morasses, or wandered boldly into thorny thickets. It is a pleasing work to have as a memorial of his elaborate researches, linked as it is with the position of the President of the British Association to which he has eventually attained.

Briquet, John. Recueil Synoptique au Document servir de base aux Débat de la sous-section de Nomenclature. 3me Congrès Internationale de Botanique. Pp. 142. Friedlands & John, Berlin.

British Association. Bristol Meeting, 1930. The President, F. O. Bower, D.Sc., F.R.S., gave an address on the Size and Form of Plants, which he has enlarged to form a separate volume. A. W. Hill, C.M.G., F.R.S., was President of Section K, and gave a vivid address, not very complimentary to the student of micro-species, as leading to a Parochial Outlook. "In the somewhat petty work no effort was made to study effects of Light and Shade or other environmental conditions." I think he ignores the great work done by critical botanists in their experiments. Probably further experiments at Potterne, to the excellent work of which Dr Hill gave due praise, may show that *Anthyllis Vulneraria* has more variations than is now admitted. (M. Patrice Riencourt de Longpré has a forthcoming paper in which many new ones are to be described.) In his treatment of cultivated plants Dr Hill alludes to the number of forms . . . showing marked differences. So, too, with some of the micro-species named by the "browsing" botanists. They may have considerable economic value, however troublesome the 2000 species of *Taraxacum* may be to the Indexer. The paper was a popular one. He received a hearty ovation at its conclusion. Tho excursions were very popular, and Miss

I. M. Roper is to be congratulated on her excellent and indefatigable work. The visit to Mr Hyatt Baker's beautifully situated and most interesting garden was a real pleasure, and he is to be congratulated on the large number of rarities he has succeeded in growing so well.

Britton, N. Lord. Nomenclature. Reprinted from Proceedings of the International Congress of Plant Sciences 2, 1569-1570, 1929. "The advantage of simplicity, with the expectation of some diversity in nomenclature, as against complexity and the futile attempt at absolute uniformity, may, therefore, claim consideration at this period of discussion. If approved, it requires allegiance to a few principles only, and, as long ago pointed out, these must neither be arbitrary nor imposed by attempted authority; otherwise they will be resented, and fail in their purpose . . . But the rejection of generic names properly typified, for the sole reason that their acceptance would change binomials in current usage is arbitrary, autocratic, and unscientific, therefore abhorrent, repellent and unwise. The abandonment of the theory nomina conservanda, as at present understood by its misguided advocates, is therefore necessary before a rational system of botanical nomenclature can be obtained. The application of the principle of rejection of hyponyms and of homonyms, should, together with the selection of type species, operate to bury enough debatable generic names to meet all actual requirements, and avoid attempted artificial conservation of names."

Bruxelles. Bulletin du Jardin Botanique de L'Etat. Avril 1930. Vol. 8, f. 3. Robyns, Dr Waller. Monographie du genre *Tinnea*, twenty-five species being described. Graminées du Congo Belget du Ruanda urundi, *l.c.*, 210, with several new species.

R. W. Butcher and F. E. Strudwick. Further Illustrations of British Plants. L. Reeve & Co., 1930. Most of us possess copies of the original *Illustrations of the British Flora* by Fitch and Smith, and, with the great extension of the knowledge of British species which has marked the interval since its publication, have long felt the need for a supplementary work of the same character. We welcomed, therefore, the publication of this volume and turned to its pages with much interest. We are all agreed that the drawings of the various species are excellent, and we heartily congratulate the artist on the accuracy and artistic merit of her handiwork. The correct drawing of so many, varied, and difficult plants is a great achievement, and one which renders the book highly valuable. Botanists possessing special knowledge of particular genera may possibly find some figures open to criticism, but in the majority of such cases the selection of the specimen to be drawn is the obvious root of the evil, and for this no possible blame attaches to the artist. Among such figures we regard No. 218 as a rather poor representation of *Gnaphalium norvegicum*; No. 371 does not do justice to *Juncus triglumis*; the stem of No. 367 seems doubtfully that of *Juncus effusus*, and the fruit of No. 390 is quite unlike that of *Pot.*

panormitanus. The typical mature fruit has " both sides convex " *only in its upper half,* the ventral margin has a double curve—*i.e.*, is *concave below*, giving a narrowed base to the fruit as a whole. The figure, however, agrees with the text, which is incorrect in this particular. In the Preface we note that " the illustrations are the main feature of this work," and with this we entirely agree. We are also informed that " only abbreviated descriptious have been possible," and with these we are somewhat disappointed. They are supposed to be a " summary of the main characters by which a plant may be identified," but we fear that many of them will not be found very helpful in this direction. They are much too general, often give characters commonly possessed by other species, and do not sufficiently stress the actual specific distinctions. In addition they are sometimes inaccurate in detail and, in the case of critical genera, should have been submitted to referees for revision before publication. To illustrate this, consider *Potamogeton*. The floating leaves of *P. alpinus* are described as " lanceolate, long-stalked." This would apply equally to many other species, but the floating leaves of *P. alpinus* are distinguished by being " obovate, blunt, tapering below, reddish," and this character is not given. The lower leaves, too, are more often blunt than otherwise but this distinctive feature is omitted. The fruit of *P. alpinus* is quite distinct among British species of the genus, the upper half is " subequally narrowed to a prolonged beak " giving the bottle-neck appearance fairly well shown in Fig. 383 B, but no mention of this invaluable distinction appears in the text. On the contrary the fruit is described as " medium, obovate, both sides convex, dorsal margin acutely keeled. This is almost a statement of generic rather than specific characters and could have been omitted with advantage, as it is useless for purposes of identification. In *P. Drucei* no reference is made to the exceptional character of the venation which is more beautiful than that of any other British species of the genus and at once distinguishes it. In *P. angustifolius* the leaves are not always " shortly stalked;" some of them are quite frequently sessile. The leaves of *P. panormitanus* are given as 1-5 mm. broad! Even if this is a misprint for 1.5 mm. it is still incorrect. They are narrower than those of *P. pusillus*, which are usually 1 mm. in width. *P. lacustris* is given as a " very rare plant of some " of the English lakes. It is locally frequent in " all the larger English lakes " (*Journ. Bot.*, 1921, 163) and we there gave the names of eleven of these. The apex is normally very obtuse and the veins number three. *P. trichoides* has narrower leaves than " 1 mm."—most often they are 0.5 mm., often less and only occasionally more (0.75 mm.), and they always possess three nerves. Apart from the descriptions we note several discrepancies in the text. Under *R. trichophyllus* (11) " pedicels " replaces the " peduncles " of the other species, and the submerged leaves are said to be brush-like, instead of bush-like. *Arctium minus* (228) in our experience is more often found in woodlands than in " waste places." We have *Lamium molucellifolium* (296) in the text and *L. mollucellifolium* in the index, but neither is correct. Under *Rhinanthus* neither

R. Drummond-Hayi nor *R. borealis* is correctly cited—cf. *L.C.*, 1506 and 1507. The latter cannot be given as (Stern.), as Sterneck put the plant under *Alectorolophus*. The use of brackets indicates that the author is aware of this, yet fails to complete the citation. The foregoing are merely a few casual examples of the many similar evidences of insufficient care in revision before publication. This is to be regretted as the text suffers by comparison with the carefully-drawn figures.—W. H. PEARSALL.

The Violets. — This very helpful handbook includes six figures of Violets, of which one is *V. calcarea* Greg., in amplification of the original illustration of *V. hirta* L., while the other five constitute a modern explanation of the plant formerly called by the collective title of *V. canina* L. The illustration of *V. calcarea* Greg., fig. 51, is a good representation of the plant to which that name is attributed. Of the remaining five, three illustrations at least, those of *Vv. silvestris* Lam., *Riviniana* Reichb., and *canina* L., are disappointing, and seem to fall below the general level of excellence of the book. Figure 52 gives a poor idea of *V. silvestris* Lam., which should have long, tapering points to the leaves, straight, narrow spurs, and longer fringe to the stipule. The plant illustrated is suggestive of *V. Riviniana* Reichb., forma *nemorosa* N. W. M. rather than *V. silvestris* Lam. Figure 53 hardly does justice to the leafiness of *V. Riviniana* Reichb. and the outline of the leaves is not successful. In figure 54 the authors wisely illustrate the variety *ericetorum* Reichb. in preference to attempting to define the type of *V. canina* L. The general habit of this plant is well portrayed but the acute apices and deeply cordate bases of the leaves are misleading. Blunt apices and shallow, sub-cordate bases to the leaves are two of the principal characteristics of this species. *Vv. lactea* Sm. and *stagnina* Kit. are illustrated in figures 55 and 56 quite satisfactorily except that in the case of the former the plant illustrated is a rather untypically broad-leaved form. The drawings throughout the book as a whole are so good that it is a matter for regret that in this section of the genus, *Viola*, the details are unsatisfactory from a critical standpoint.—P. M. H.

CALIFORNIA UNIVERSITY, PUBLICATIONS OF. *Zostera marina*, Morphological and Phenological Notes on. W. Albert Setchell. Vol. xiv., n. 19, pp. 389-452, tt. 59, 1929. Includes var. *latifolia* Morong. A most useful paper. The author says that the variations within the species are var. *angustifolia* (which is not discussed for lack of experience—it may be *marina* × *nana*), var. *typica*, var. *stenophylla* A. & G. and var. *latifolia*, which is the chief object of the paper. Of this Pacific variety many good figures are given. The question arises—Does it come from British Seas? It has greater distinctiveness and permanence than *stenophylla* (which seems to be associated with edaphic factors, such as hard bottoms), and it may be an ecad in the reversible sense of Clements or an ecotype in the fixed sense of Turesson. Vol. xi., n. 3. *Nicotiana longiflora*, Somatic Chromosomes of, Lillian Hollinghead, 1929. Vol. xi., n. 14, *N. alata*, var. *grandiflora*, Chromosomal Irregularities of, Priscilla Avery. Vol. xi., n. 15. The genus *Lessingia* Cham., Systematic Study of, John T. Howell. Vol. xi., n. 16. Oriental genera of *Polypodiaceae*, Edwin Bingham Copeland, 1929. Vol. xi., n. 16. *Nicotiana Tabacum*, Inheritance in Mutation following Treatment with X-Rays and Radium, T. H. Goodspeed. Three successive monogenic mutations induced by treatment of *N. Tabacum*, var. *purpurea*, with X-Rays and Radium are described. Vol. xi., n. 17. *Nicotiana Tabacum*, Occurrence of Triploid and Tetraploid Individuals in X-Ray Progenies, T. H. Goodspeed. Vol. xi., n. 17. A new Californian species of *Sphaerocarpus*—*S. Drewei*, E. Grace Wigglesworth, 1929. Vol. xiv., n. 20, pp. 453-588, tt. 105, 1929, *Microdictyon*, The Genus, W. Albert Setchell.

CARDIFF NATURALISTS SOCIETY. Report and Transactions. Vol. lxi., pp. 112, 1928; 10/-. Includes:—River Scenery at Head of Vale of Neath, F. J. North, with excellent photographs. Some notes on the Brown and the Black Rat in the City and Port of Cardiff, Colin Matheson. These show the injury done to water pipes by rats in Cardiff. Mithraism in Wales, Vig Nash Williams. Entomological Fauna of Skoner Island, H. M. Hallett. The Kite in South Wales, J. H. Salter, D.Sc., a delightful paper, etc.

CARTER, H. GILBERT-, M.A. OUR CATKIN-BEARING PLANTS. An Introduction. Pp. 61, tt. 16. Oxford, at the Clarendon Press, 1930; 4/6 net. This small compact volume is just what was needed by the Field Botanist. In no tract of Botany was the knowledge in our text-books so inadequate and faulty. Even now, despite the publication of Elwes & Henry's " Trees," and the " Cambridge Flora," it is scarcely up to the level of flowering plants. This little volume however will give the information which is needed to identify the catkin-bearing plants. The frontispiece is occupied with an excellent illustration of *Populus serotina*, " the commonest poplar " in Britain, though it has not been longer in cultivation than a hundred years. Its spread through planting over Britain was most remarkable. The true Black Poplar, *P. nigra*, has a much older connection with Britain. These trees were for a long time confused. There is a short but very vivid description of each species. In the treatment of the Willows the author is just as happy. The photographs are in all cases good and distinctive. The two Birches are well defined. So, too, are the two Oaks. The characteristic stellate hairs of *sessiliflora* are clearly shown; in *Robur* they are simple. The Elms were, till recently, greatly confused, and even to-day the names are often wrongly applied. Our common English Elm is called *U. campestris*, but it is not the *campestris* of Linnaeus' " Species Plantarum," nor of his synonyms, figure, herbarium, or locality. So far as our English tree is concerned, it is not *campestris*, and the name should not be used for it. It is far better to face the music, and at once give to it a distinctive name, such as *U. anglica*. See plate xiii., where there is a good figure of it. P. xii. is labelled *U. nitens*, the shining Elm, which is commoner in Eastern England. Strictly speaking this is an erroneous name. *U. carpinifolius* Borek. is much older, but it has been used in varied senses. It is the *U. campestris* L. in part, and is usually the plant so called on the Continent. The third tree he gives is also wrongly named—it is the *U. minor* Miller, which is a delightful tree with its upright branches and small leaves, under which, or closely allied to it, is the var. *sarniensis* = *Wheatleyi*, which has larger leaves, flowers earlier, and has a larger straightly notched fruit. Then comes what Carter calls *U. minor* Mill., which is, as I have just said, *stricta* Lindley. Its correct name is *U. Plotii* Druce, and it was originally described from Oxfordshire by Robert Plot. The Wych Elm is a native of Scotland certainly. It is the *U. montana* Stokes (not With.), the *glabra* of Hudson, and there are several hybrids which are extensively planted. A good feature of the book is the classical allusions. The book can be most warmly recommended.

CLOS, ENRIQUE C. Segunda Contribucion al conocinscento de los arboles y arbustos cultivando en la Argentina. Gives the descriptions and keys to the various species of *Leguminosae-Mimosideae* cultivated in Buenos Aires, with figures. Bol. Minist. de Agric. de la Nacion. Includes *Acacia Farnesiana*, *A. dealbata*, *Albizzia Jutibrissus*, etc.

CORREVON, HENRY. ROCK GARDEN AND ALPINE PLANTS. Edited by Leonard Barron, with portrait, tt. 8, coloured plates 8, pp. 544. Macmillan & Co., 1930; 25/- net. This is a handsome and well printed volume, and will assuredly be freely patronised by Rock Garden lovers. There is an appreciative foreword by Mr Barron. It is written both for English and for American readers. He pays a just tribute to Backhouse of York, W. Robinson of Sussex, Lord Redesdale of Batsford, Sir E. Loder at Leonards Lee, and Hon. C. Ellis at Frensham. He says of Miss Jekyll, Lord H. Bentinck, Miss Willmott, Sir F. Crisp, and Gerald Loder that they have made gardens to which none of the Continental ones can be compared. He says Canon Ellacombe came to see him in Switzerland when he was 85 years old. The growth of the cult in America has been extraordinary, and he gives a delightful illustration of a garden near Paolinia, Philadelphia, set in a beautiful landscape. A well written chapter deals with plants in the mountains. He says that wherever the alpine *Silene acaulis* grows it is stemless, but in the lowlands its flowers are smaller and have stems 8-10 cm. long in hybrids. Excellent material is given on acclimatisation and cultivation of Mountain Plants. Chapter iv. treats of Limestone-soil and Granitic-soil plants. *Vaccinium uliginosum* is said to be one of the plants that most hates lime. A suggestive chapter is that on the growing of Alpine plants in Sphagnum in pans and in a tourbière. All the plants of some tested were completely cleared of earth and planted in pure Sphagnum. This proved most successful with *Arnica*, Edelweiss and *Soldanella*. The construction of a Rock Garden is well explained by diagrams. Then he speaks of the conservation of the alpine flora, and describes some of those which have become established. The culture of Ferns seems to be coming into its own again, and a list of suitable species is given, but it is a pity he does not adhere to the nomenclature of the "Index Filicum." A very interesting chapter is given on the terrestrial Orchids. Hardy Cacti are well described. Chapter xii. is a lengthy alphabetical list of suitable plants for rockeries, with valuable practical hints scattered throughout. The book should be on every gardener's shelf.

Dahlstedt, H. Taraxacum, De Svenska Arterna av Slaktet. VIII. Spectabilia. Kungl. Svenska Vetenskapsakademiens Handlingar, Tredje serien. Band 9, No. 2, pp. 107, with maps. In this splendid piece of work of Dr Dahlstedt's, the thirty-one species of Spectabilia which occur in Sweden are given with the forms and varieties, and sketches of the leaves and fruits. Of these we have *eximium*, *spectabile*, *faroense* (Durham, etc.), *linguilobum*, *Landmarkii*, *praestans*, *maculigerum*, *naevosum* (Berks, etc.) and *naevosiforme* (which occur in nearly all the British counties, Teesdale, Forfar, etc.), *croceum* and *Nordstedtii*, the latter is not a rare pratal plant. The distribution maps are excellent.

Devonshire Transactions. Vol. lxii., pp. 125-133. Edited by G. T. Harris, recorder. It would have been more convenient if the boundary of the two vice-counties of Devonshire had been given and also if the two divisions of Devon had been added to the records. Many new localities are given, and it is claimed that several new county records are given. One would have liked to have seen specimens of *Orchis latifolia*, *Sorbus latifolia*, *Erophila majuscula*, and a more detailed description of the locality of *Erica vagans* which is claimed as a new record for the county. Mr Harris may be congratulated upon the energy he is throwing into his work, which we all hope to see materialise into a Devonshire Flora.

Domin, Dr Karl. Acta Botanica Bohemica. Vol. viii., 1929. *Cerosora*, a new Fern genus with *C. chrysosorum*. *Ligusticum olympicum* Novak, a new species for the Thessalian Olympus. *Sedum Krajinae* n. sp. and its nearest allies. Acad. de Sc. de Bohem., 1929. *S. robustum* n. sp. *S. Zlatiborense* n. sp. Domin. *S. acre*, var. *Drucei*, he says, represents a British race of *acre*. *S. sexangulare* L. must be regarded as a form of the true *S. acre* L. and not as a synonym of *S. mite* Gilib. (*S. Boloniense*), as many authors regard it. Additamenta ad Cognitionem florae Russiae Subcarpaticae. Pp. 26-43. Schaedae ad Floram Cechoslovenicam exsiccatam, Cent. I. *Asplenium cuneifolium* Viv. is kept a distinct species.

Druce, G. Claridge. The Flora of Northamptonshire, pp. cxlii., 304. T. Buncle & Co., Arbroath, 1930; 21/-. Rarely indeed does it fall to the lot of one person to review such an output from the same pen as the *Flora of Buckinghamshire*, the revised *Flora of Oxfordshire*, the *British Plant List*, and the *Flora of Northamptonshire*—in so short a period as four years—yet this has been my unique and pleasing privilege. In the present volume the publishers have maintained the very high standard of presentation we always associate with their publications and must be again congratulated upon the result. In the Preface we again recognise the author's well-known acute realisation of his possible limitations but he possesses a fine sense of proportion, is deeply grateful for any assistance he has received and strongly emphasises his enjoyment of the beauties of Nature and the more permanent pleasures of the social side of his botanical labours. After all, life's greatest happiness is always that we share with others. The Introduction is somewhat lengthy (143 pp.) but of quite exceptional interest. It opens with a short but adequate description of the Topography of the county, followed by a description of its Geology by Mr Beeby Thompson. This occupies 10 pp. and is of outstanding excellence throughout. Its writer deplores the deficiency of information as to surface-deposits on existing geological maps of the county, and botanists in other counties have realised the same need. The treatment of the succeeding section—Botanical Districts—is based upon the river drainage-systems, as in the author's previous Floras, and as good maps of the physical features are readily obtainable, this is a wise choice. Particularly interesting and informative—in the writer's view—are the numerous and valuable ecological observations which permeate this section of the work. If all systematists would recognise that, apart from correlation with habitat conditions their work is relatively of little value, we should make a much greater and far more valuable contribution to the sum of human knowledge. Throughout the present volume Dr Druce has set us an excellent example in this respect. By far the most lengthy section of the Introduction is that of Botanologia—nearly 80 pp. of profoundly interesting accounts of the various botanical writers to whom we are indebted for much of our present knowledge of the county flora. Opening the book casually at page c. of the Introduction the writer imagined that he had—in error—picked up an Anthology of Verse, for here are 25 pp. of excellently chosen extracts from the poet John Clare. All of them amply justify their inclusion and many, indeed, are quite arresting in their aptness and beauty. They will be eagerly devoured by botanists whose tastes are literary. Turning to the actual text of the Flora, we find the same admirable arrangement, clearness and differentiation of type, and exhaustive detail which marked its predecessors. Critical genera have received the most liberal treatment and are brought right up to date. Interspersed with the text are more of the choice literary quotations which marked the Introduction and which greatly enhance the value of the book. The Index of Latin names seems beyond reproach and in that of English names we could only discover such trivial irregularities as Bee orchis, 225—for Bee Orchid in the text, but Butterfly Orchid is correctly given. Conversely Man Orchid and Musk Orchid occur in the Index but *Orchis* for each in the text. Not only is this volume indispensable to any botanist resident in Northamptonshire or the adjoining counties—it has 8 pp. of valuable comparison with these—but even those from more remote districts will find it of the greatest interest. Taking three casual "dips" I noticed that *Myrrhis Odorata* is now extinct in Northamptonshire although still locally abundant in Cumberland, especially near dwellings.

The housewife gathers a handful to rub down her old oak furniture—the essential aromatic oil acting as a preservative and also imparting a fine polish. She also puts the dried leaves away in her linen chest to keep out moths. On p. 47, *Impatiens Noli-tangere* is quoted as "very rare," yet one of the last sights I saw in S. Cumberland was a road "improvement" at the foot of Buckman Brow, where a gorgeous colony (possibly 200 square yards in extent) of this lovely species was being completely obliterated under tons of road-metal. Many other species familiar enough in my past experience I failed to find in the Index. Among them was *Centunculus minimus* which I always associate with Dr Druce. I had rowed him out on Esthwaite Water to see *Naias* and *Hydrilla*, and as we returned to the boat-landing he spied a damp gravelly patch on shore and was on his knees in a moment searching for the tiny *Centunculus*—which of course he found! This review is necessarily brief as I am inordinately busy in "straightening up" after my recent removal from Cumberland to Kent, but I felt that we could not allow the current *Report* to appear without some reference to so outstanding an achievement as that of Dr Druce in completing a further county Flora of such great excellence in his 80th year. We have long been lost in amazement at the author's indomitable energy and prodigious output of publication—we have an annual reminder in the Secretary's Report—and now the *Flora of Northamptonshire*, his native county! He commenced it some fifty years ago but his removal to Oxford brought other interests and it was not until after the publication of the Floras of Oxfordshire, Berkshire and Buckinghamshire that he returned to his "first love." All botanists will heartily congratulate Dr Druce on the completion of this excellent work. Throughout its pages we are conscious of his fondness for the county of his birth and he has produced a fascinating volume which must have brought him not only great joy of achievement but also the most fragrant memories. That, in addition, he has made a further substantial contribution to the sum of human happiness your reviewer gladly testifies.—W. H. Pearsall.

Edwin, Maribel. In England Now. The Countryside, Week by Week. Pp. 255. The Sheldon Press, 1930; 5/-. This small book gives, under headings, most of the chief pleasures and beauties of the countryside, making a very readable volume. It is one to have near one, to look at constantly and then unconsciously be led along an easy path of knowledge. A charming little work, which will leave a fragrance of its own behind and one which we would not readily miss.

Enever Todd, Lieut.-Colonel E., O.B.E., M.A. A Short Survey of the Genus Viola, in the Journal of the Royal Horticultural Society, vol. lv., part 2, September 1930. The first part of this paper, now published, deals with the Nomimium and Dischidium Sections of the genus. Although the author does not attempt a review of all the species of the genus from a critical standpoint, this paper cannot fail to be helpful to a student of British violets, on account of the compact and comprehensive view which it provides of the violets of the world as a whole. The arrangement followed is the same as that adopted by W. Becker in *Violae Europaeae*, which provides a more rational taxonomy for the British species than they are given either in the second edition of Druce's *List of British Plants* or in the eleventh edition of the *London Catalogue*. The following points in the paper are of interest to British botanists. The author, following Becker, retains *sepincola* Jord. as a species or sub-species of *odorata* L., contrary to the more usual practice of applying this name to one form of the hybrid *hirta* L. × *odorata* L. *V. rupestris* Schm. is referred to as "a circumpolar species" in the Riviniana group, and its range in Britain appears to be restricted by the author to the single station on Widdybank in Teesdale where it occurs as var. *arenaria*. *Vv. lactea* and *montana* are treated as sub-species of *canina* L., while the name *persicifolia* Roth is preferred to *stagnina* Kit. Speaking of *V. palustris* L., the author says: "Its place in Russia and North Asia is taken by *V. epipsila* Led. and a number of localised species, some of which reach nearly to the Arctic Circle," thus emphasising the northern and eastern distribution of *epipsila*. No mention is made of the alleged occurrence of this species in Britain. If we have a second species or sub-species in Britain allied to *palustris*, surely Mr A. J. Wilmott's suggested attribution to a species with south-west distribution such as *Juressi* is the more probable, and the range of the British "epipsila" is certainly mainly Atlantic.—P. M. H.

ENGLER, A. DAS PFLANZENREICH. 95 Heft, iv., 130. OXALIDACEAE R. Knuth. Pp. 481, Maii 11, 1930; £3 15/-. A most excellent Monograph in its descriptions, synonymy, and geographical distribution. The bibliography is very comprehensive. Our *O. Acetosella* (No. 422) is described on page 231. Under it we have var. a. *alba* (typica) Peterm. Fl. Lips., 506, 1838; var. *purpurascens* Mart. Fl. Mosq., 81, 1817 = var. *caerulea* DC. Prod., 700, 1824 = *lilacina* Lange Handb. Dansk., 395, 1851. Corolla purpureo-lilacina. Var. *subpurpurascens* DC. Prod., i., 700, 1824. Corolla ± purpurascens. Var. *violacea* Westf. Prov. Ver., v., 179, 1878 (1879). Corolla violacea vel lilacina. Var. *rosea* Peterm. Corolla rosea-purpurea venosa. Var. *parviflora* (Lejeune Fl. Spa., ii., 307, 1813) DC., *l.c.* Petala tantum duplo longiora quam calyx. Stamina minora brevissima, maiora calyce aequilonga. *O. stricta*, caulis adpresse pubescens plerumque copiose. Capsulae pubescentes. *O. corniculata*, caulis laxe pubescens diffusa et repens saepe subglaber. Capsula glabra. *O. stricta* L. (not of Robinson), p. 143. Includes as a synonym *O. Dillenii* Jacq. There are several varieties. *Navierii* (Jord.) R. Knuth is put under *stricta* as caulis humilior, et basi ramosissimus, ramis saepe ascendentibus, superne hirsutus. Known from Germany and Limoges. *O. corniculata* L. (not of Robinson), p. 146. forma *purpurea* (Parl. Fl. It., v., 271, 1872), caulis foliaque purpurei. f. *variegata* (var. Goiran) folia ± variegata. f. *Tropaeolodes* (Schlechter). *O. cornicu-*

lata, var. *rubra* Nichols Gard. Dict., ii., 540, 1886, folia subtus manifeste purpurea. Flores majores. Var. *repens* (Thunb.) Zucc. Caules pernumerosi prostrati. Folia multo minora ± glauca. Africa, Asia, America. No mention is made of var. *minor* Lange, gracilior foliis 2-3 pts. minoribus (vix ultra 4 mm. longis ciliatis ceterum glabriusculis pedunculo saepius unifloro. As there is Ecklon & Zeyher's var. *minor*, Lange's variety cannot stand. We may call it nov. var. *Langeana* Druce. Dr Knuth seems to have overlooked this Spanish plant. *O. Martiana* Zucc., 1829-30 = vice *O. corymbosa* DC., 1824. S. America, Madeira, Ascension, Kameroons, Reunion, China, Ceylon, Java, Philippines, Hawaii. *O. violacea* L. N. America, Mexico (Ital.). *O. cernua* Thunb. =*O. lybica* Viv. Cape, naturalised in Europe, N. Africa, N. America, S. Australia. *O. articulata* Savign., var. *hirsuta* Brog. = *O. floribunda* Lehm. S. America. *O. latifolia* H. B. K. Mexico, Texas, Bermuda, Haiti, S. America, Spain. *O. incarnata* L. S. & W. Africa. *O. tetraphylla* Cav. Mexico; adv., Simla.

GARDENERS' CHRONICLE. Price 6d weekly; 30/- per annum, post free. 5 Tavistock Street, London, W.C.2. P. 168, *Ulmus stricta*, var. *Wheatleyi*, with a good photograph and description of this Northamptonshire tree; unfortunately, however, it is given under a wrong specific and varietal name. The correct species name is *U. minor* Miller, see descriptions in Miller's Gardeners' Dictionary. The variety is more correctly var. *sarniensis* Loudon, popularly known as the Wheatley or Jersey Elm, so well adapted for roadsides, parks, etc. One of the best plants in the country is in Mr Buckley's garden at Richmond Tavern, where there is a tree 90 feet high. *Juglans nigra* is also recommended for planting, and it cannot be too highly praised. Mr N. E. Brown continues his Remarks on *Mesembryanthemum*. There is a photograph and a well-deserved appreciation of Mr J. Ramsbottom, O.B.E. Pp. 48 and 68, Plant Hunting on the Thessalian Olympus, by Mr E. Ingersen, gives details of that most attractive area. *Ranunculus alpestris* is figured on p. 26. There is a notice of Dr Rendle on p. 2, 1930. A beautiful illustration of the mauve New Zealand *Hymophylla* is given on p. 9. A suggestive article on p. 339 on " The Naming of Plants " is given, in which it is pointed out that it is difficult to change the name of a well adopted plant—*Diervilla* or *Weigelia*, *Sequoia* or *Wellingtonia*, or we may add *Nasturtium* and *Tropaeolum*. What advantage can there be in retaining an incorrect name? Nor can we assent to the statement that there could be no more beautiful name for a rose than Betty Uprickhum. What we must do is the best we can, knowing that even among the elect unanimity is not obtained or obtainable. 1930, July-December. Roosevelt Expedition to French Indo-China, 530, F. Kingdon Ward. *Helxine Solerolii* is known in Kent and Gloster as " Mind Your Own Business." *Viscum album* and its Hosts, 512, 1930, H. H. Warner. Comte Ernst Silva Tahouca, the well-known owner of the beautiful park at Prahonice, near Prague, has a photograph and an appreciation, p. 2. *Mesembryanthemum* (*Conophylon*) N.E.B., p.

8. *Rheum nobile*, p. 134, in Schpechuan, with good illustrations. The Ninth International Horticultural Congress, held at Vincent Square under the Presidency of G. W. E. Loder, Esq., was a distinct success. Mr Chittenden read a paper on Horticultural Nomenclature, which is based on sound lines. He would suggest that the same varietal name, *e.g.*, *pulchella*, should be used only once in a genus. It avoids confusion, and indeed I adopted it in the case of *Orchis incarnata*, because I had already established *pulchella* as a dunal variety of *O. praetermissa*, and therefore I altered my *Orchis incarnata*, var. *pulchella*, to *puchrior*, to avoid confusion. It is a beautiful plant which may be worthy of sub-specific rank. Subsequently the Horticultural Conference joined the International Botanical Congress at Cambridge after its meeting in London on August 15, over a thousand members belonging to 50 countries being represented. But as a matter of fact there are so many sections of Botany that " the liaison breaks down at its start." Six distinguished foreign botanists received a Doctorate degree—Dr J. Briquet; Prof. F. L. E. Diels, Berlin; Prof. Halle, Stockholm; Prof. L. R. Jones, Wisconsin; Prof. C. Schroeter, Zurich; Prof. F. Went, Utrecht. Yucca, p. 195, beautiful illlustrations of *Y. Whippei* in Southern California. On p. 212 " W. " writes a very pungent note on the eccentricities of the Conference. *Origanum vulgare*, with its white variety, which seems to breed true, p. 230. I saw it in fine condition on Apes Down, Isle of Wight. A new genus of *Mesembryanthemum*, N. E. Brown, p. 278. *Asphodeline lutea* loves change of habitat, p. 289. The Species Concept, Dr C. C. Hurst, a paper read at the Cambridge Congress, p. 325. He has succeeded in reducing the 6000 species to 211. Memories of Dr E. H. Wilson, p. 333, is a valuable contribution with an excellent photograph. *Hippophae Rhamnoides* and *Parnassia palustris* on sand-dunes, p. 357. Roosevelt Expedition to Indo-China, F. Kingdon Ward, p. 364. *Woodsia ilvensis* occurs at 2500 feet in Wales, p. 427. The North Gallery Kew, of which a readable account is given by W. Balfour Gourlay, p. 453.

Geneve, Bulletin Soc. Botanique. R. Chodat. Vol. xxi., 1929-1930. 20 fr. P. 263, C. Lacaita, Rectification à la flore des Picos de Europa. Beauverd, Gustav. Une race d'*Acer opalus* à fruits pourpres—var. nov. *corallinum* Beauv.

Glasgow Naturalist. The Journal of the Natural History Society of Glasgow. Vol. ix., 1919-1930, pp. 124. John Smith & Son, 57-61 St Vincent Street, Glasgow; 5/6. A most useful and excellent publication. It is pleasing to notice that Possil Marsh is now claimed as a Sanctuary. Pp. 5-46 contain a valuable list of Clyde Casuals by our late member, Mr R. Grierson. Pp. 52-100 are occupied with obituaries of deceased members. Among them stand out the names of Richard McKay, Robert Kidston, John Paterson, a valued Editor for many years, and D. A. Boyd, President of the Cryptogamic Society of Scotland and a most active President, Harvard, U.S.A. Contributions to Gray Herbarium. Svenson, H. K. Eleocharis Monographic Studies. The author definitely decides against the spelling *Heleocharis* and *Heliocharis*. He divides the genus into eleven series:—(1) MUTATAE. (2) PAUCIFLORAE, which includes our own *Scirpus pauciflorus* and *E. parvula* Link, 1836. (3) ACICULARES, which has our own *acicularis*, of which my forma *submersa* Fl. Berks. 524, is altered to f. *inundata*, because of a var. *submersa* H. H. Nils. (4) OVATAE. (5) MACULOSAE. (6) PALUSTRIFORMIS (PALUSTRIS, UNIGLUMAE, MAMILLATA, etc.). (7) INTERMEDIAE. (8) TENUISSIMAE. (9) SULCATAE. (10) MELANOCARPEAE. (11) TUBERCULOSAE. Fifty-four species are treated in the first five series. Fernald, M. L. *Ligusticum scothicum* [sic] L. on the North Atlantic and of the North Pacific, *l.c.*, 7, 1930. The plants of this area Fernald describes as *L. Hultenii*. Stebbings, G. L. A Revision of the North American species of *Calamagrostis*. Includes *C. neglecta*, of which its var. *borealis* is given. The authority for the species is Gaertn. Meyer & Schreb. Fl. Wett., 94, 1799, which is earlier than Beauvois. *Borealis* is a smaller plant, 1-4 dm., panicle 2-5 cm. long, callus hairs ¼-½ the length of the lemma, and inserted ⅓-½ the way up. In the type the callus hairs are ½-¾ the length of the lemma, and the hairs ¼-1/5th up the lemma. It appears to be the *Arundo groenlandica* Schrank Regensb. Denksch. ii., 8, 1818 = *C. groenlandica* Kunth Rev. Gram. i., 79, 29, and our own plant should therefore be var. *groenlandica* (Schrank) Dr., nov. comb. Fernald, M. L. *Potamogeton alpinus* and nov. sp. *P. microstachys*, *l.c.*, 76. The identity of *Juncus canadensis* and *brevicaudatus*, *l.c.*, 83.

Herklots, G. A. C., Ph.D. Orchidaceae of Hongkong, with Photographs of several species. The Hongkong Naturalist. May 1930. $5 per annum.

Hegi, Dr Gustav. Alpine Flowers. The most common in Switzerland, Austria and Bavaria. Translated by Winifred M. Deans, M.A., B.Sc. Pp. 74, tt. 38. Blackie & Son, London, 1930; 7/6. This is just the book which is wanted by anyone who is visiting Switzerland for the first time, for in this portable volume will be found the most striking and commoner flowers of the Alps. What memories they awaken as one turns over the papes, with the 250 plants its contains, all in colour, and all for so small a price. The descriptions are in simple, untechnical language. The excellent glossary and the copious drawings are all in its favour, and will command for it a large sale. It will inevitably create an Oliver Twist frame of mind—an earnest craving for something more. We await another instalment with anxiety. The stay-at-homes in England will find much to interest them in its pages and pictures, and it surely will induce them also to undertake a journey to the glories of the Alps.

Hooker, Sir J. D. The Student's Flora of the British Isles. Third Edition, reprinted. Pp. xxiii., 563. Macmillan & Co., London, 1930; 10/6. This excellent Flora went through three Editions during

Sir Joseph Hooker's life-time. Ed. i., 1870; ii., 1878; iii., 1884. If my memory serves me rightly 10,000 of the third Edition were printed. Even in his life-time, a new one, although there were plenty unsold, was considered to be highly desirable. While staying with him at Kew he pressed me to prepare a fourth Edition, and eventually I consented to do so. For that purpose I, for several years, annotated my copy. After some time, Sir Joseph wrote to me on September 17, 1904:—"Happening to mention the Student's British Flora to Sir W. Dyer, he greatly surprised me in saying, 'I have often thought I should like, if you are agreeable, to carry on the Student's Flora myself when I retire.' I should have thought it was the last thing that he would care to do. Under these circumstances I must reconsider the whole affair, and beg you to suppress my correspondence with you on the subject. I am letting him think the fact of there being upwards of 200 copies in hand, and last year's sale was only 110 copies, renders the vision of a new Edition far off indeed." In after years it was understood that Mr C. E. Salmon was engaged on the fourth Edition at the time of his lamented death. In the circumstances it seems that Macmillan's have chosen the wiser course and have simply reprinted the third Edition, since the experiments with Bentham's "Handbook" and Babington's "Manual" were not unqualified successes. There is no doubt that the arrangement and details of distribution, of elevation, of habitat and descriptions, as given by Hooker, are extremely good, and those who want something less expensive than Syme's "English Botany," and more comprehensive than that given by Hayward's "Botanist's Pocket Book," will find this to be a happy vade-mecum, which should be in every British Botanist's Library. But the exceptionally heavy and critical field work of 46 years, which has resulted in such a large number of additions being made to our Flora, are, of course, not to be sought for here. The additional species, not counting the hundreds of micro-species, include *Thalictrum* species, *Aquilegia alpina*, *Ranunculus sphaerospermos*, *Fumaria* species, *Sisymbrium orientale*, *S. altissimum*, *Erophila* species, *Arabis alpina*, *Cochlearia scotica*, *C. micacea*, *Bursa* species, *Viola epipsila*, *V. rupestris*, *V. tricolor* species, *Polygala alpina*, *Dianthus gallicus*, *Lychnis Preslii*, *Cerastium subtetrandrum*, *Sagina scotica*, *S. Reuteri*, *Spergularia Bocconei*, *Montia lamprosperma*, *Hypericum Desetangsii*, *Lavatera cretica*, *Lupinus*, *Alchemilla* species, *Pyrus* (*Sorbus*) species, *Saxifraga Drucei*, *Callitriche polymorpha*, *Chaerophyllum aureum*, *Galium debile*, *Matricaria suaveolens* (alien), *Senecio erraticus*, *Centaurea Jacea*, *Taraxacum* species, *Scorzonera*, *Statice planifolia*, *Limonium lychnidifolium*, *L.* species, *Centaurium Scilloides*, *Myosotis sicula*, *M. brevifolia*, *Plantago Hudsonii*, *P. Sabrinae*, *P. Edmondstonii*, *Veronica aquatica*, *Euphrasia salisburgensis*, *E.* species, *Orobanche reticulata*, *O. Ritro*, *Thymus* species, *Satureia* species, *Salvia Marquandii*, *Ajuga genevensis*, *Chenopodium opulifolium*, *C.* species, *Salicornia* species, *Polygonum calcatum*, *P. equale*, *Rumex arifolius*, *Euphorbia virgata*, *Ulmus Plotii*, *Populus serotina* (*deltoidea*), *Hydrilla*, *Spiranthes gemmi-*

para ?, *Helleborine leptochila*, *Orchis praetermissa*, *O. Fuchsii*, *O. O'Kellyi*, *O. purpurella*, *Lilium pyrenaicum*, *Juncus nodulosus*, *Luzula pallescens*, *Potamogeton Drucei*, *P. panormitanus*, *Zannichellia gibberosa*, *Eriophorum opacum*, *Carex microglochin*, *C. Pairaei*, *C. Sadleri*, *Milium scabrum*, *Agrostis verticillata*, *Calamagrostis scotica*, *Koeleria vallesiana*, *K. albescens*, *Poa Chaixii*, *P. irrigata*, *P. palustris*, *Glyceria retroflexa*, *Festuca sulcata*, *Bromus interruptus*, *B. britannicus*, and *Agropyron intermedium* and *A. campestre*. Again, a large number of plants have had their grade altered, and perhaps still more have had their names changed, and a very large number of hybrids have been recorded. Despite all this, the Student's Flora has a distinct place of its own, and we are grateful to the publishers for bringing it out in a clear type and with pleasing accessories.

HONGKONG NATURALIST. Edited by A. H. Crook and G. A. C. Herklots. $5 per annum. An excellently produced publication with seven beautifully coloured plates. There is a good and useful account of Cobra Venom, and an account of Lychee cultivation in the New Territories.

HURRY, JAMIESON B., M.A., M.D. THE WOAD PLANT AND ITS DYE. Pp. 328, tt. 16, portrait and map. Oxford University Press, 1930; 21/-. This volume was posthumously issued under the auspices of Warren R. Dawson. The work was much helped through the Press by A. R. Horwood and A. W. Exell. Dr Hurry was at one time Public Health Doctor for Reading. There he had a large garden which he stocked with medicinal plants, among which, always prominent, was the Woad. I am not certain that I did not give him his first specimens. Largely grown as it formerly was, it has now almost disappeared from cultivation in Britain. It exists under several conditions, as is evidenced in the variety of its seed pods. Two varieties are recognised as distinct—var. *canescens* Boiss. and var. *stenocarpa* Boiss. Much attention is given as to the details of its cultivation, but the annual product in Britain is only ten to twelve tons, worth about £40 a ton. It is grown chiefly in Lincolnshire. It has a wide distribution in Europe, Asia and Africa. Illustrations are given of the Woad House and Mill, and the chief tools used in preparing it. At Boston a mill had eight wheels. A magnified section of the stem is given which shows indigo in the cells. The history of the Woad in Britain is given as well as the development of the industry. The trade regulations are described and the restrictions placed against its export. The cultivation abroad is placed under Review. Its taxation in England is mentioned at some length. Dr Hurry tells us also of its use in the Fine Arts and the old Herbals are quoted on its therapeutic uses. There is an excellent Bibliography. It is gratifying to see so pleasing a memorial to Dr Hurry, whose general character we so much appreciated.

INDEX LONDINENSIS, containing Illustrations of Flowering Plants, Ferns and Fern-allies, being an emended and enlarged Edition continued up to the end of the year 1920 of Pritzel's Alphabetical Register of Representations of Flowering Plants and Ferns. Compiled from Botanical and Horticultural publications of the eighteenth and nineteenth centuries. Prepared under the auspices of the Royal Horticultural Society of London, at the Royal Botanic Gardens, Kew, by O. Stapf. Oxford, at the Clarendon Press, £5 5/- each. Vol. i., pp. xx., 547; A-C; 1929. Vol. ii., pp. 548; C-D; 1930. Vol. iii., pp. 555; E-J; 1930. Vol. iv., pp. 568; K-P; 1930. This monumental work is steadily going on. As we have said, in method of citation, typography, and ampleness of incorporation, it is an opus magnus, and will be of great service to future botanists.

IRISH NATURALISTS' JOURNAL, THE. Vol. iii. Bi-monthly; 6/- per annum. Secretary and Editor, Capt. A. D. Chase, M.C., M.A. Botanical, R. Lloyd Praeger, Prof. J. Small, and Rev. W. R. Megaw. The Phenological observations have been kept up—Mr A. W. Stelfox giving a list of plants seen in flower in the Grey Stones district about ten days before Christmas 1929. Mrs Knowles records *Cleome serratula* and *Bromus britannicus* from near Sydenham Station in Co. Down. One must congratulate Mrs Knowles upon the excellent manner in which her Department in the National Museum is kept. Mr Stelfox records *Equisetum variegatum* from the Cliff Banks of the river Liffey near Poulaphonsa Fall, Co. Wicklow. Mr P. M. J. Adams, M.Sc., p. 29, Romance of the Shamrock. Grimes records the flowering of the Hawthorn at University College, Cork, on January 31. May this not be the Glastonbury Thorn, var. *praecox*, which does flower normally about that early date. There is an appreciative memoir of Nathaniel Carrothers, p. 49, by R. Lloyd Praeger. A useful paper on Grasses is supplied by Capt. Chase, with a key list to 30 common Irish grasses, and he offers two prizes, one of £3 and the other of £2, for the best collection of the 30 species mentioned in his article. Miss Fisher, p. 112, reports that *Stratiotes* is thoroughly established at Woodburn Mill Dam.

JAQUET, Dr F. CATALOGUE RAISONNE DES PLANTES VASCULAIRES DU CANTON DE FRIBOURG ET DES CONTREES LIMITROPHES. Pp. 380, 1930. We congratulate our honorary member on the publication of this useful work. It is arranged according to the Engler system, beginning with the Filices, 27 species being included. *Cystopteris alpina* is placed under *C. Filix-fragilis*. The genus *Dryopteris* is widened to include *Lonchitis* and (*Polystichum*) *lobata*, but the authority Huds. should have been bracketted. *Ceterach* is merged into *Asplenium*. *Eupteris* is rightly chosen. Under *Sparganium erectum*, *S. neglectum* is put as a sub-species, as is *Potamogeton panormitanus* under *pusillus*. *Leersia* is *Oryza*. Curiously *Festuca Bromoides* is absent. *Festuca capillata* is a sub-sp. of *F. ovina*, while *Bromus racemosus* and *commutatus* are kept distinct, but *Carex lepidocarpa* and *C. Oederi* are sub-sp. of *C. flava*. Fifty-seven species of Carices are given. The 12 species of Orchids include *O. incarnatus*, *O. maculatus* and *O. latifolius*. *Ulmus* *laevis*, *U. campestris* L. (*glabra* Mill.) and *scabra* Mill. are given. Surely it is time for *campestris* to be banned as a nomen confusum. There is no synonym given to explain *Spergularia campestris* Aschers. *Thalictrum minus* is wisely chosen to include *elatum*, *saxatile*, *collinum* and *pubescens*. *Papaver Lecoqii* is a sub-sp. of *P. dubium*. Fifty species of *Rubus* are mentioned, 21 Roses, and 35 Alchemillas, which shows the results of intensive study. *Circaea intermedia* (*canadensis*) is wisely kept as distinct from *alpina* or *lutetiana*. *Myosotis Scorpioides* Hill is used for *M. palustris* With. *Mentha verticillata*, *gentilis*, *dumetorum*, *villosa*, and *piperita* are all given specific rank. *Veronica Anagallis-aquatica* is alone given. Eight Euphrasias are included. The authorities cited for *Rhinanthus stenophyllus* is antedated by my own publication, but it may be held that an index name used by Schur is valid. *Matricaria suaveolens* seems also to have successfully invaded Switzerland. The Hieracia occupy numbers 1712 to 1784, the latter being the number of species recorded for the Canton, with *Lamium album* and *Orchis Simia*, which have been added since the text was written. The total is therefore 1786.

JENKIN, T. J., M.Sc. Inheritance in *Lolium perenne*. iii., Base factors C. & R. Journ. Genetics, xxii., 389, 1930. Our member's excellent investigations into the British Grasses are augmented by this paper. The occurrence of "red" plants must be well known to all field workers, but Mr Jenkin has shown that the complementary dominant factors C. & R. are concerned with the production of red base colour. In the absence of these, no red base colour is developed. No economic significance has as yet been ascertained. but the red plants appear somewhat less vigorous than the others. Perennial Red Grass at Aberystwyth. Welsh Journ. of Agric., vi., 1930. This gives the results of the cultivation of many forms of *Lolium perenne*. The greatest green weight was obtained from Station-bred pastures 156, Hawkers Bay N.2, 133, British Indigenous 120, Norwegian 109, British 100.

JOURNAL OF BOTANY, THE, 1930. Edited by A. B. Rendle, D.Sc., F.R.S. Price, 2/- monthly; 22/6 yearly. Taylor & Francis, Red Lion Court, Fleet Street; Dulau & Co., Ltd., 32 Old Bond Street, W.1. Includes Suppl. 2 to Watson's Topographical Botany. New and Rare British Galls, J. W. Heslop Harrison, p. 39. Fifth International Congress, p. 54. Dr Rendle's retirement as Keeper of the Department of Botany, British Museum, p. 64. We must heartily congratulate Mr J. Ramsbottom on his appointment to the Keepership. A variety (*Lacaillae*) of *Scilla nutans*, new to Britain, P. Senay, p. 112. An artificial cross between *Viola hirta* and *V. odorata*, R. Snow and M. M. Chattaway, p. 115. *Alchemilla tenuis* Buser in Herts, G. C. Druce, p. 121. Notes on Irish Pansies, Dr Drabble, p. 141. New records for Roses in Surrey, J. Fraser, p. 154. Notes on *Sorbus* by the late C. E. Salmon, p. 172. *Rubus laetus* Watson vice the Ty Groes *R. latifolius*, W. Watson, p. 183. *Rosa scabriuscula* Sm., Col. A. H. Wolley-Dod, p.

185. Source of the generic name *Rorippa*, T. A. Sprague, p. 219. The author ignores the oldest name *Radicula* on the untenable ground that it has since been used in Morphology, and that it was unaccompanied by a specific name, but Dillenius, who founded it, had specific names under it, and in more recent times Moench also had them. Have all Bentham and Hooker's generic names species names under them or how many of Linnaeus' generic names (*Gen. Plant.*) had specific names supplied? Fertilisation of *Ophrys fusca* and *lutea*, Col. H. M. Godfery, p. 237. Sudre and the British Rubi, Rev. H. J. Riddelsdell, p. 240. Notes on Kerry Plants, R. L. Praeger, p. 249. In this he confirms my hybrid × *P. Scullyi* = *P. grandiflora* × *vulgaris*. Pollination of the Fly Orchis, H. G. Willis, M.A., p. 280. *Rubus* records, Rev. H. J. Riddelsdell, pp. 305, 334. Bristol Meeting of the British Association, p. 321. British Representatives of *Juncus tenuis*, Prof. Fernald, p. 364. British Forms of *Arenaria serpyllifolia* and *A. leptoclados*, Dr Drabble, p. 370.

KEW BULLETIN OF MISCELLANEOUS INFORMATION. Wild Cacao in Surinam and British Guiana, J. G. Myers, with photographs. Cardanoms, I. H. Burkill. Additions to Index Kewensis. A Botanical Expedition to Persia, J. M. Cowan, at Em ra bad. The Karoo Garden, R. H Compton. The orris-root of commerce is said to be the produce of *Iris florentina*, *I. pallida*, and to a smaller extent *I. cermanensis*, 80,000 plants going to an acre. The portrait of Sir David Prain has been placed in the Kew Herbarium. A most interesting account is given by A. D. Cotton of a visit to Kilimanjaro, where he found a new species of *Senecio*. Notes on the Flora of the near East, W. B. Turrill. A new *Carex*—*C. Troodii* is mentioned [I am asking the Forestry Department of Cyprus to gather it in a later state]. Poison Plants, F. N. Horner. Additions to the Flora of Siam. Flora of the Nearer East. Appendice i.—Gives an account of the Jardin Nutience Bidgetung. At Kew 62,000 plants have been mounted, and 78,111 incorporated in the Herbarium and Library. Appendice ii.—List of the Staffs of the Botanic Gardens of the Empire. Appendice iii.—List of Seeds.

LEACH, J. A., D.Sc. AUSTRALIAN NATURE STUDIES. A book of reference for those interested in nature-study. Pp. 525. Macmillan & Co., London, 1929; 12/6. This is a specially valuable work to those who are teaching the subject. Its 37 chapters treat not only of the Botanical but of the Zoological side of Natural History. It has an enormous number of illustrations aptly chosen for the purpose, so that the experiments can be readily followed. Seeds and their development are well described. Then come studies of Plant Foods, the Breathing of Plants, in which the student is put into closer touch with the subject than is usually the case, the Leaf, Plants and Dry Weather, and Leafless Plants. Leaf Appendages and Face of the Leaf are simultaneously treated. The Root, with its power of root-absorption, affords an interesting chapter. It has been calculated that for every pound of dry matter in a plant it has used over 300 pounds of water, liberated as water vapour, and this chapter easily runs on to the explanation of Osmosis. In describing the stem, it is stated that in the Olway and Gipps land are found stems often measuring up to 150 feet without a break. That plants feel is shown in chapter seven. Climbing plants, Parasites and Bud studies are usefully and vividly described, as are the flower and its pollination, and fruit and seed scattering. Some of the seeds preserved by Robert Brown in the Flinders Expedition, it is said, germinated recently. Plant spreading other than by seed is explained. Then come general plant-studies, for which the Dandelion is a splendid subject. In many schools the plants are grown from seed to seed and are studied at each stage. This reveals the fact that it is sometimes self-pollinated. Wayside and common plants are chiefly adventive. Plant foes are mentioned. Among these *Hypericum perforatum* is a great pest, the roots of it may go four feet down. Ragwort, Sheep Sorrel, Capeweed, and Acaena are other pests. Then follows a similar treatment on the Zoological side, which is extremely well done. There is room for a similar work treating of British Biology, but no Briton will be disappointed with the Australian representative.

LINNEAN SOCIETY, PROCEEDINGS OF. January 1931, pp. 252. President, Sir Sidney F. Harmer, K.B.E., F.R.S. Includes his Presidential address, pp. 85-252, on Whales and the Whale Fisheries.

LINNEAN SOCIETY, JOURNAL OF THE. 14/-. A Revision of the British Euphrasiae, H. W. Pugsley.

LINNEENNE, SOCIETE DE LA SEINE MARITIME. Raoul F. Mail. Prés. M. Docteur A. Loir.

LONDON NATURALIST, THE. The Journal of the London Natural History Society for the year 1929. L. Reeve & Co., Ashford; 3/-. Birds of Middlesex since 1866, W. Clegg, 233 species being enumerated. Our member, Mr L. B. Hall, contributes notes on Some Recent Additions to the British Flora. These have appeared in our Report. It is not correct to say that *Glyceria retroflexa* is a recent addition. It was actually figured as *Poa retroflexa* by Curtis in the " Flora Londinensis " in the latter end of the eighteenth century. Mr H. J. Burkill contributes a valuable paper on British Gall Mites. Mr W. Watson supplies an excellent contribution on the Brambles of Kent and Surrey. The Botanical records of the London area are continued, and show much good work. Could the various counties or vice-counties in which they occur not be given? The Society is to be congratulated upon so excellent a Report and also upon the earnestness with which its work is carried on.

MAIDEN, J. H. A Critical Revision of the genus *Eucalyptus*. Vol. xii., pts. 61-70, Index. Part 2 (Pt. lxxii. of the whole work), 1929; 3/6. Edited by R. H. Cambage, C.B.E., F.L.S., and W. F. Blakely, the latter describing 10 additional species.

Marie-Victorin, Frere. Les Liliiflores du Quebec. Cont. Lab. Bot. Univ. Montreal 14, 1929. With 75 illustrations. Another most valuable contribution by Frère Marie-Victorin. It includes several new varieties. There is a good generic clavis. The name *Tofieldia minima* (Hill 473. 1756) Druce = *T. palustris* Huds., 1778, is used. *Juncus Dudleyi* has a wide distribution. *Juncus bicornis* Michx., 1803, has an earlier name in *J. gracilis* Sm., given for Don's plant from " Cette espèce serait donc dans les Iles Britanniques, comme *Eriocaulon*, un des derniers représentants d'autres anciennes comme aux deux continents alors réunis." *Juncus articulatus* is rightly named, but it seems that *alpinus* might be referred to *nodulosus*. A well printed, learned, and most useful work. Additions aux Cyperacées de l'Amerique du Nord. 1929; *l.c.*, n. 15. Gulf of St Laurent. *Carex vesicaria*, var. *Grahami* (Boott) Kükenth. Petites rivières Anticosti. My own feeling is that *Grahami* deserves specific rank. It occurs not only in its classic locality in Glen Phee, but also on Ben More in M. Perth. *C. Oederi*, nov. var. *Rousseauiana* Mar.-Vict. Quebec. It is taller than the type, and should be compared with the European *elatior* of Anderson. *C. disticha* Huds. and *C. nutans* L. Boncherville on the Gulf of St Laurence, both probably introductions. *Scirpus atrovirens*, var. *georgianus*, nov. form *viviparus*. Longueil, près Montreal. There are photographs of these plants and also of the habitats of *Scirpus alpinus* on the Isles of St Génévieve and Marteau, with the collector shrouded in a muslin net to keep off mosquitos. 1930; *l.c.*, n. 16. Les Variations laurentiennes du *Populus tremuloides* et du *P. grandidentata*. 1930; *l.c.*, n. 17. Le genre *Rorippa* dans le Quebec. Includes *amphibia* (but the synonym *Radicula*, which is the older name, is omitted); *sylvestris* with a var. *stenocarpa*; *obtusa* (not european) and a variety; *palustris* (the syn. *Radicula islandica* (Oed.) Druce is omitted) which has a glabrous phase in Europe and North America (var. *glabrata*), but these are not identical, and a pubescent state also in America (var. *hispida*). The generic name was founded long before it was used in a morphological sense. Surely the latter is the one to go.

M'Kerrow, James Clark. Novius Organum. Essays in a New Metaphysic. Pp. 277. Longmans, Green, & Co., London, 1930; 9/-. " This work outlines somewhat revolutionary views on the subject of why we do what we do. Are we conscious performers or are we animated solely by the joint effects of the habits of the race and the habits we have formed individually in the course of the chapter of accidents that is each individual's own history? "

Marlborough College. Report of the Natural History Society of, for the year 1929. N. 78. Cambridge University Press; 5/-. The Botanical section notes 594 species and varieties. Several micro-species were additions to the Flora. *Bromus interruptus* was found at Aldbourne—it appears to be decreasing in quantity in Britain. Mr Cecil P. Hurst, F.L.S., contributes an excellent paper on the local Fungi.

There is a good list of Microlepidoptera, and Mr H. C. Brentnall supplies a useful account of Savernake Forest and of Shaw Church. We notice that Mrs Wedgwood has given some valuable Botanical Books to the Library, and she has been generous enough to give it a considerable sum of money.

MARSDEN-JONES, ERIC M. The Genetics of *Geum intermedium* and its Back-crosses, Journ. Genetics, 377, 1930, with a coloured figure and four plates of illustrations of the petal-forms. He does not mention that the hybrid was recorded in my *Flora of Berkshire* in 1897. *Rumex glomeratus* should be *R. conglomeratus* Murr. and *Alnus rotundifolia* should be *A. glutinosa*. In this wood at Bradfield the author says that the back-cross is having a marked influence, and that in the near future it will completely replace *rivale*; indeed, in the wood on the south-east side of the river it has already done so. It was Bell Salter, not Bell Slater, who crossed the two species of *Geum*. Mr Marsden-Jones finds that they do not breed true. It is an excellent paper.

MARSDEN-JONES, E. M., and W. B. TURRILL. Report on the Transplant Experiments of the British Ecological Society at Potterne, Wilts. Journ. Ecol., xviii., 352, 1930. This gives a capital account of their experiments. Large quantities of *Silene vulgaris* (*Cucubalus* and *angustifolia*) were grown, and showed a great range of variation. *Plantago major* and *Silene maritima* are exceedingly plastic, not so *Centaurea nemoralis* and *Anthyllis*. Although not mentioned in this paper, it has been stated that other Centaureas, *e.g.*, *C. Drucei*, are not constant.

MARSDEN-JONES, E. M., W. B. TURRILL, and V. E. SUMMERHAYES. Special Herbaria as Adjuncts to Modern Scientific Research. In this a strong plea is made to preserve the specimens mentioned, say, in any paper, in an ecological plant community. This is most important. I once heard a paper read, of over half an hour's length, upon a *Juncus* growth on a hillside. The reader named it *lamprocarpus*, and all the data obtained and deductions made were as if it were the species under review. The photographs to illustrate it showed that it was *J. silvaticus*. That such a Herbarium should be formed is evident, and the suggestions made seem most admirable.

MARSHALL, OTTOLINE, F.R.H.S. SOME FAVOURITE FLOWERS AND THEIR WILD RELATIONS. A Book for Children. Pp. 65. Sheldon Press; 1/6. This is a pleasing and useful book, in which a considerable amount of information is given about Roses, Violets, Chrysanthemums, Asters, Pinks, Campanulas, Columbines, Larkspurs, Geraniums, Anemones, Snowdrops, Narcissus, and Crocus. The language is clear and many interesting examples are given. Under Strawberries it is stated that "as early as the fifteenth century, wild strawberry roots were gathered by the bushel and transplanted into gardens where the rich soil and careful cultivation gradually improved the growth of the berries and brought them to the size we know now." As a matter of fact this is quite wrong. Our British Strawberry, *vesca*, was largely cultivated in Tudor times, but although many varieties were known, there was little variation in size. That did not take place till after the discovery of America, when *F. virginiana* and, later still, *F. chiloensis* were brought in and led to crossing with these larger forms. It may be said that Otto of Roses is still largely prepared in Bulgaria from *Rosa centifolia*. Probably *Mathiola incana* is native on the cliffs of the Isle of Wight. Another slip is the statement that "Saffron is extracted from the Stigmas of the Crocus." Actually it is the dried stigmata. The volume is pleasing in appearance.

Murr, Dr J. *Cirsium Seegeriorum* = *C. arvense* × *carniolicum*. Innsbruck. Named after the Assistant in Botany at the Institute in Innsbruck. Luzulae hybridae novae, *L. multiflora*, var. *alpestris* × *L. spicata*, Arlberg, 1900 m., J. Murr = *L. Winderiae*, after Hedwig Winder, who has worked assiduously at that district.

National Trust for Places of Historic Interest or Natural Beauty. Report, 1929-1930. 7 Buckingham Palace Gardens, Westminster. This excellent Report gives beautiful views of some of their properties—Tarn House, Monk Coniston; Housesteads, Hadrian's Wall; Broom Hill Point, Derwentwater; Runnymede, given by Lord and Lady Fairhaven and Hon. H. Broughton; Glebe Cliff, Tintagel, and Friday Street. President, H.R.H. the Princess Louise, Duchess of Argyll; Vice-President, Viscount Grey of Fallodon; Chairman of the Executive Committee, John Bailey; Hon. Treasurer, Col. Hon. Sidney Peel, D.S.O.; Secretary, S. H. Hamer. During the year, in addition to some places already mentioned, there have been added Stables Hill; Wray Castle. Windermere, and Wallow Barrow Crag; additional lands at Leigh Woods given by Melville Wills, Esq.; Crockers Potch, Waggoners Wells; Rampsholme, Derwentwater; the Treasurer's House, York, given by Frank Grey. There are some good maps of these acquisitions. Among the donations for the year are £2000 from Viscount Esher, £2000 from our member, Sir Samuel Scott, Bart., £500 from Miss Holt for Monk Coniston, £6000 from R. T. Cochrane, Esq., for Cathedral amenities.

Nature. Edited by Sir Richard Gregory. 1/- weekly. Macmillan & Co., London. This most ably edited periodical continues its successful career with undiminished vigour. Dr Cockayne has been presented with the Darwin Medal at the Canterbury University College, New Zealand. In his speech he referred to his work on hybrids, of which he had identified 360. The Botanical Museum of the University of Zurich has voted the sum of 4000 Swiss francs, distributed over three years, towards a hydrobiological investigation of the high alpine Swiss lakes. February 6th was the centenary of the birth of Daniel Oliver, for many years Keeper of the Herbarium at Kew, where he began his work in 1858. There was an exhibition of his drawings in the Museum at Kew during the summer. The Botanical Exploration of Krakatoa. C. A. Backer denies that the vegetation of the island was totally destroyed by the eruption, and somewhat rudely treats the views of those holding an opposite view. Present-Day Problems in Taxonomic and Economic Botany, A. W. Hill, C.M.G., F.R.S. He gave the inaugural address to the school of Pharmacy in October 1930. He paid an official visit to South Africa in the autumn of 1930.

NATURE RESERVES, SOCIETY FOR THE PROMOTION OF. Handbook, 1930. During the year a large number of effective posters have been issued urging the preservation of wild flowers. The various properties under the care of the Society have been adequately looked after, and it is satisfactory to note that the experiment of introducing the Great Copper Butterfly to Wood Walton has been successful.

NORDHAGEN, ROLF UND OLAF HANSSEN. Die Adventivflora eineger West-Norwegischen Kornmühlen in der Jahren, 1927-1928. Bergen Mus., No. 4. A list of over a hundred species. This includes *Carduus hamulosus, Beckmannia Oyzigachne*, a Kamtchatkan species.

NORTHAMPTONSHIRE, JOURNAL OF THE NATURAL HISTORY SOCIETY AND FIELD CLUB. 1929, 1930. Editor, Beeby Thompson. An account of John Clare's Library is given by R. W. Brown. It is contained in the Local Room of the Public Library at Northampton. Mr Wallis laments the non-occurrence of *Hieracium boreale* in the London Catalogue. He will find it in my British Plant List as a heading for the eight species into which it has been sub-divided. Mr Allen records some local Plant Variations, and gives the Flora of the parish of Abington.

ONSLOW, MURIEL WHELDALE, M.A., University Lecturer in Plant Biochemistry, Cambridge. THE PRINCIPLES OF PLANT BIOCHEMISTRY. Pp. 326, pt. i. Cambridge University Press, 1931; 16/- net. In this first part, of what will be a most useful work, Miss Onslow has six chapters. The Sugars, the Cell-wall, Oxidising and Reducing Systems, the Plant Proteins, Nitrogen Metabolism, and Respiration. Each of these subjects is treated in full detail and with great elaboration. This book, which deals only with the higher plants, is intended for the student and for the beginner in research. The problems here considered are, in the main, those concerned with the biochemistry of the sugars and the nitrogen compounds; the former when they take part in cell-wall formation and in respiration, the latter chiefly in connection with the synthesis and the break-down of protein. Oxidising systems are also included, but only such as are known to be characteristic of the above-mentioned group of plants. The work is produced with the excellent type and clearness of detail which is a characteristic of the Cambridge University Press.

OSTENFELD, C. H. Mindre Meddelelser Smaa Bidragtel den Danske Flora, ix. Floristke Notitser hoved sageligfra ekskursion, i., 1928.

Trifolium repens, nov. var. *angustiflorum*, petalum imparum angustius ± plicatum album, alae roseae.

Ostenfeld, C. H., and C. Syrach Larsen. The species of the genus *Larix* and their Geographical Distribution. 8 maps. tt. 35, pp. 100. Det. Kgt. Vidensh. Selskab. Biol. Medd., ix., 2, 100, 1930. The genus is divided into 10 species and 3 varieties, and he choses *Larix decidua* as the name for our common plant. A group of *L. Lyalli* is photographed from the classic locality at Lake Louise, but the beauty of it must be seen on the spot, as is also the case with the Japanese Larch, *L. Kaempferi*, on Fujiyama. The authors reduce Henry's *olgensis* to a variety of *L. Gmelini*.

Pack, Charles Lithrop, and Tom Gill. Forests and Mankind. Pp. 250, tt. 24. Macmillan & Co., London, 1929; 12/6. This is a pleasing work treating on somewhat novel lines of the problem of Forest life and Man and the influence exerted one upon the other. The forests of the world are continually changing; nothing is static. The history of the forest from its early coniferous character is contrasted with that of to-day. Russia has the most extensive forests of any country that equals the British Empire, third comes Brazil, fourth the United States. Asia, in spite of her great forest area, possesses only 2½ acres for each of her people, while S. America has 30 acres. Foresters estimate that about 38 billion cubic feet of timber are grown yearly. The forests of the United States are unrivalled among the world's timberlands, and they are well described, the destructive influence of mankind upon them being clearly shown. Wood is proved (chapt. 2) to be the greatest gift of the Forest. Paper now is so largely obtained from woodland that the chapter on it is of great service. Eight million tons of paper are used yearly in the States, and this huge amount is bound to increase. Other gifts of the forests are shown in a readable and useful chapter. Turpentine and Sugar are especially noticeable. Forests and Wild Life. Among the forest enemies Fires stand out strongly, but Beetles and Caterpillars are by no means negligible. The war against wood-waste is clearly necessary. In an average forest about 10 per cent. of the trees are defective and are not even cut, 15 per cent. are left in the forest in the form of tops, 10 per cent. more in bark. In cutting up, 10 per cent. is wasted in sawdust, 20 per cent. more is ranked in the form of slats and edges, and finally about 30 per cent. remains as timber. Even then before it is worked into furniture, about half of this is wasted in the process of manufacture. It has been found that a ton of dry coniferous wood can be made to yield 20-25 gallons of alcohol. The exploitation of American forests is on such a scale that the country is heading towards forest bankruptcy.

Parker, Eric. English Wild Life. With an Introduction by Stanley Baldwin. Pp. 186. Longmans, Green & Co., 1929; 3/6. As the ex-Premier says, " The choice of subject seems to me to be singularly happy." But it is not only the subject matter that is so good, it is the delightful language in which it is conveyed that so greatly adds to its charm. I have one fault to find, and that is that the flora of England and all that that means is practically omitted from notice. The book is essentially ornithological, although there are some remarks on the mammals, including those that have become extinct since historic times, namely, the bear, the beaver, the reindeer, the wild-boar and the wolf. How curiously close to what has happened with the plants—the two ragworts, the centaury, Davall's Sedge. The pine marten among the animals is nearing its end, so, too, the alpine *Pinguicula* and the Soldier Orchid are also on the verge. The *Eriophorum alpinum*, which I put among the extinct, has been reported this year from Scotland. The author (notwithstanding his statements) and his enchanted readers may even now see that wonderful visitor, the large Copper, in its wonderful flight in an English Fen. Last year from some specimens brought from the Continent, over a hundred emerged and afforded one of the sights of the world; hardly less remarkable than that of the Imperial Blue in the swamp of a Cinghalese jungle.

PENNELL, F. W. Genotypes of the Scrophulariaceae in the First Edition of Linné's Species Plantarum. Proc. Acad. Nat. Sc. Philad., 82, pp. 9-26, 1930. The 29 genera included in the Scrophulariaceae are carefully discussed. It is shown that Linnaeus often founded his genus on a single individual, and that he did not always widen the description as new plants were put in to which the original genetic characters did not strictly apply. For example, in *Veronica*, which was founded mainly on *V. officinalis*, the characters often did not apply to the other species. Indeed, only 4 of the 27 species have fruiting characters that conform. The Genotype for the genus is *V. officinalis*, that of *Gratiola* is *G. officinalis*, of *Scoparia*, *S. dulcis*, of *Verbascum*, *V. Thapsus*. *Bartsia* is held to have been founded on *B. coccinea*, which Pennell gives as the genotype. It includes *viscosa*, *alpina* and *Trixago*, but not *Odontites*. In *Rhinanthus*, with 5 species, Pennell wisely makes the genotype *R. Crista-galli*, thus avoiding the mistaken use of *Alectorolophus*. So too with *Euphrasia*, with its genotype, *E. officinalis*, which was the *E. officinarum* of Bauhin. *Melampyrum arvense* is the genotype. *Scivalbia* and *Tozzia alpina* are not British. *Pedicularis sylvatica*, although not in the Linnean Herbarium, is the genotype, as are *Gerardia tuberosa* and *Chelone* (Dill.) L. *glabra*. *Antirrhinum majus* is the genotype in the compound genus of Linnaeus. Some misguided people wished to retain the older name for a section of a compound genus raised to generic rank which had the larger number of species—hence the Linarias would be called Antirrhinums—a reductio ad absurdum. *Scrophularia* includes 12 species, of which *S. nodosa* stands as the type. *Celsia orientalis* is adopted as it seems that the word *obtusus* is a lapsus calami for *attenuatus*. *Digitalis purpurea*, on historical and descriptive grounds, is the genotype. Others are *Halleria lucida*, *Capraria biflora*, *Selago corymbosa*, *Hebenstretia dentata*, *Erinus alpinus, Buchnera americana, Sibthorpia europaea, Limosella aquatica,* but Linnaeus should have adopted Dillenius' earlier name *Plantaginella, Dodartia orientalis* and *Mimulus ringens.*

Phenological Report, The, 1929. Edited by a Committee of the Royal Meteorological Society. 39th Report. Pp. 207-270. E. Stamford, Ltd.; 3/-. The valuable statistics are collected from 489 stations. The data include Temperature tables. There are notes on the opening of the flowers of the Hazel, Coltsfoot, Wood Anemone, Blackthorn, Dog Rose, Harebell, Greater Bindweed, Devil's-bit Scabious, and Ivy. On this one might suggest that the same species should be observed in all cases, *e.g.*, Hawthorn, Dog Rose. In the case of Ivy, it may be that the Guernsey variety is a different one from that of Orkney. In Guernsey the earliest date was given as 126, in Orkney 145. This may be a true difference, but it may be that var. *sarniensis* itself may be an earlier flowerer even if grown in a more northern latitude. There are only ten days' difference in the flowering of the Hawthorn from Guernsey and from Beauly, E. Ross, where both Hawthorns may be presumed to be the same species, but supposing *Oxyacanthoides* was the plant under observation in, say Oxfordshire, a very different result would be obtained. As a matter of fact, at Beaconsfield the Hawthorn flowered on 144, *i.e.*, 12 days later than in Guernsey. One ought to be quite sure what is *Betula alba.* Buds and insect records were also noted, and a table of dates of first day of song and migration of birds, and the first appearance of insects is also given.

Podpera, Josef. Musci Insulae Rossicae prope Vladivostok. Pub. Fac. de l'Université Mazaryk, 1929. A large number of new species are described and the details are well figured.

Rechinger, K. H. *Rumex dictyocarpus* Boiss. & Buhse, with a new hybrid = *R. Sanninensis.* Fedde Rep., xxvii., 385.

Ridley, H. N., M.A., C.M.G., F.R.S. The Dispersal of Plants Throughout the World. Illustrations by Miss M. B. Moss and the author. Pp. 744, tt. xxii. L. Reeve & Co., 1930; £3 3/-. In this handsome and portly volume, Mr Ridley has drawn from his unrivalled store of knowledge gathered from many places and during years of strenuous work. The methods of dispersal are treated of in twelve chapters. In the first, Dispersal by Wind receives proper recognition. The importance it deserves is not given to it by some botanists. In the early days the spore-bearing plants covered the greater part of the world's vegetation owing to wind agency. In the Tertiary period when Mammals came on the scene, they were accompanied by the extensive evolution of drupaceus and baccate fruits, often superbly coloured. Grasses were chiefly due to herbivorous Mammals. The Quaternary Period witnessed the advance of man, and in the course of time he assisted in the dispersal of its species. Many changes are due to climatic circumstances, and of these numerous instances are given. "Competition" is a great factor in the vegetation of a country. One of the most widely distributed wild plants in the world is the common red Phragmites, which has light feathery fruits admirably adapted for aerial voyage, easily detachable rhizomes suitable for water dispersal and for a great climatical adaptability, so that it rejoices in both temperate and arctic regions. It also possesses most aggressive methods of growth, so that we see it filling up large areas of marshlands. As I have pointed out in the "Flora of Oxfordshire," it grows well in hedges on dry upland soils, to which the fruits have been blown by the wind from the reed-beds of the lowland regions. Dr Ridley holds that the vegetation of Krakatoa was practically destroyed by the great eruption, but in three years' time there had been with wind-borne or water-borne species brought as spores, seventeen species, as plumea or light-seeded plants five, and sea-borne plants six. Four bird-conveyed species came in fourteen years later, and twenty-three years later only twelve. The origin of modification for dispersal is treated of in a most illuminative manner. Indeed, throughout the work one is struck with the wealth of detail and apt illustrations, which will ensure the work the success to which it will surely attain. As regards wind-dispersal, Ridley quotes various authors who cite the long distances which stones and dust are conveyed, *e.g.*, fine dust of Quartz, 700 miles from land, and Genoa dust, 600 miles. *Calluna* and *Erica Tetralix* were blown across the Cattegat from the Swedish coast to Jutland, 110-120 kms. It seems likely that the plants of *Arenaria Sedoides* which grow on the shingle at Montrose were actually blown down from the mountains of Angus and Perth. Interesting details are given as to the Seeding powers of many species. One plant of the Shepherd's Purse yields 40,000 seeds. Its nearly universal dispersal is due to its pollification, to the readiness with which it is conveyed by animals. The Foxglove is also a profuse seeder, each plant may produce 100,000 seeds. In New Zealand it has become one of its most noxious weeds. Nor is the influence of ants left unnoticed. In Cyprus I saw Cyclamen plants, the seeds of which were being conveyed to narrow crevices in the rock by ants. In course of time the corm had to accommodate itself to a fissure ⅛ inch wide, so that it became tabular as in biscuits. Tumble-weeds are those whose seeds, or young plants, detached from the soil, are blown over large tracts of country, *e.g.*, *Salsola Kali*, which has spread very widely in Australia, Chile, S. Africa, N. America, etc. In the Orchidaceae, numerous instances are given of the weight of the seeds—if weight is a proper term to be applied to such imponderable seeds. That of *Habenaria Gymnadenia* only weighs .000,008 grams. In *Orchis maculata*, 15,000 seeds weigh one gram. A plant may have thirty capsules, containing 186,000 seeds. The spore-bearing plants form an interesting chapter. The specially adapted fruits for wind dispersal are profusely and aptly illustrated, as is chapter two, which treats of Dispersal by Water—Ice, Streams, Rivers, and Floods. Here come in the two *Azollas* which Ridley gives for England, but I am not sure whether we can really claim *caroliniana*. Some plants spread by Vegetative Reproduction, as *Elodea*. Of *Hydrilla* he says it may have been widely distributed in Europe at one time, but I think it is an arrival, not a survival. Detached Rhizomes form another method. This is seen in *Acorus*, *Phragmites*, *Sagittaria*, etc. Dispersal by Water. Other plants move in a mass in the water. The various kinds of Sudd and of its constituent vegetation are given as well as the grass lands of S. America. Other sections treated of include Floating Seeds and Fruits, and these have some good illustrations. *Polygonum Hydropiper* and *Persicaria* by the river at Kew must, he thinks, have been carried by the water for long distances. Once, years ago, in the dykes below Peterborough, the surface was covered with what, from a distance, I hoped was *Wolffia*. It was really the achenes of *Ranunculus sceleratus*, which covered the surface for more than a mile of dyke, a plank across the stream keeping them back on the surface of the slowly moving current. In the Botanical sequence of Bentham and Hooker is given a list of the plants dispersed by Rivers. Then follows a list of plants dispersed by animals, birds, reptiles, and batrachians, of which most valuable details are given, each page having something valuable. It is a magnificent compilation. Some of the illustrations are coloured. Chapter four illustrates the dispersal by simple adhesion " they are burrs they will stick," chapter seven, Adhesion by special modifications, and chapter eleven, Island Floras. The Azorean plant, *Erythraea Massonii*, is mentioned, but its correct and much older name is *Centaurium Scilloides*, of which full and fascinating details are supplied. The last chapter is devoted to the Dispersal of Orders and Genera. There is an excellent Bibliography, which, however, does not include the Adventive Flora of Tweedside, although that of Montpellier is given.

RONNIGER, Dr K. Die Thymus-Arten der Balkan Halbinsel. Ex Hayek Prod. Fl. Penins. Balcanicae. Band 2, pp. 337-382, 1930. Sixty-one species are described, of which *T. ilicianus*, *T. Kosaninii*, *T. Malyi*, *T. eximius*, *T. carstiensis*, *T. hercegorinus*, *T. Korbii* are new species. Of our British species, *T. Pulegioides* is the only one represented. There are nineteen varieties described.

ROYAL HORTICULTURAL SOCIETY, JOURNAL OF THE. September 1930. Edited by F. J. Chittenden, F.L.S. Masters Memorial Lectures, 1929 Stock: Scion Relationships, R. G. Hatton, M.A. English Garden Making under the Early Stuarts, H. Array Tipping. A most readable article, illustrated by permission of " Country Life," with some excellent photographs, those of Thorp Hall, near Peterborough, being very pleasing. The Genus *Viola*, the Nominium and Dischidium Sections. Lt.-Col. E. Enever Todd, O.B.E. He alludes to the genus having about 500 species which possess 2000 to 2500 names, irrespective of hybrids. The Nominium section has about 238 species, divided into 17 groups. 1. Of *V. odorata* he gives the range, delimitating its southern frontier from the Canaries westwards through Morocco, Sicily, Crete, the Crimea, Lebanon, Caucasus and Iraq to Turkestan. North of this it is found only in Europe, excluding European Russia. Elsewhere in the world it has been introduced. An Eastern extension is given for *V. indica* Becker from North-west Frontier Province along the Himalayas to Sikkim, ascending to 10,000 feet in Kashmir. 2. *V. sepincola* Jord. is given as a full species, with no allusion to its being of hybrid origin. 3. *V. alba* Bess. 4. *V. hirta* L. The Rostrate Violets. 5. *V. mirabilis* L., under which is *V. pseudo-mirabilis* Coste. The author says it is only known from one place in France and one in Serbia, but this (teste Mrs Gregory) I have found in five British localities. 6. The American *V. rostrata*. 7. *V. silvestris* Reichb. 8. *V. Riviniana*. This is described as having pale green foliage and large lilac flowers, which suggests to me that I am colour-blind. As Col. Todd says, it is very floriferous, a single plant having over 350 flowers in a Kentish garden. It has a wide range, its area stretching from Madeira over the whole of Europe, going farther north than *silvestris*. It appears in two forms from the region between America and Japan, and is then taken across to the American continent by *V. rupestris* Schm. *V. arenaria* grows on the Karakorums at 12,000 ft. and on the Sierra Nevada, N. America, at 10,000 ft., descending to the coast in California. 9. *V. canina*. The Arosulate group. 10. *V. elatior* Fries, with which is put *V. persicifolia*. The bog Violets include *V. uliginosa* Bess., *V. libanotica* Boiss., and *V. Kusnezowiana* Bess. 11, The Bog violet, *V. palustris*, under which *epipsila* and many others are grouped. The Adnatae group has No. 12, *V. Gmeliniana*; 13, *V. Selkukin*; 14, *V. Parrinii* (a too comprehensive group); 15, *V. betonicifolia* Sm., but the later sections do not contain an European representative. To the Dischidium section he gives 9 species, of which *V. biflora* is a well-known continental species. In another page Mr Patrick M. Hall has alluded to this paper. Walnuts, H. Spence. Forty-four species are given by M. Dode. Due praise is given to *Juglans regia*, and most people will share in his regret that it is not more frequently planted instead of the ugly nondescript elms which so frequently desecrate the roadsides. In California the output is enormous, 43,000 tons of walnuts being produced in 1927. As many as 130,000 acres are occupied with their culture, but here the culture is scientific, the nuts are graded, and the best qualities are branded. The machine used is capable of marking 2000 walnuts a minute. They grow well in England, and a tree in the Thames valley in 1927 yielded a crop of 54 bushels. Good advice is given as to grafting, etc. T. Alexander Barnes—The Flora of the Equatorial Highlands of Africa, p. 266, gives some interesting details of the Island of Fernando Po, where he saw beautiful Lobelias and, in the streams, the striking Water Crinium (*Crinum natans*). St Thomas has six or seven endemic Begonias, one of which, *baccata*, grown at Wisley, reached seven or eight feet high. *Cistus gigantea* grows to 15 feet high and is common over the island, its great forked spikes weighing several pounds. A gigantic *Amorphophallus* was found on Fernando Po. It was about 4½ feet high. The Flora of the Ruwersori area proved very attractive.

SCHINZ, HANS. Festschrift. Pp. 787, 1929. Beiblatt zur Vierteljahrsschrift der Nat. Gesell. in Zurich. N. 15. With a capital photograph and an engraving of Dr H. Schinz. It contains thirty important articles, including the Flora of Maloja by Gustav Hegi. Braun Blanquet gives the Vegetation of the Atlas. C. Schroeter describes his Excursion in Ost-Java. Henri Spinner contributes à la biologie et à la phytogéographie de quelques phanerogames du Jura Neuchâtelois.

SPRATT, E. R., D.Sc., etc., and A. V. SPRATT, M.Sc.. etc. BIOLOGY FOR SCHOOLS. A Text Book Suitable for School Certificates and Similar Examinations. Pp. 400. W. B. Clive, London Pictorial University Press, Ltd., 1931. This little work covers the syllabuses of London, Oxford, Cambridge, Durham, and the northern Universities School Certificate Examinations. "The work is essentially based on the observation of plants in their homes, and careful examination of their parts and functions from specimens." The book is quite useful for the class the authors appeal to. It is well arranged, crammed full of information, and is illustrated by 428 figures, the text occupying 48 chapters. The first is devoted to *Spirogyra* and *Chlamydomonas*, which illustrate life in a drop of water. Chapter two describes *Pellia*, chapter three, the Water Flower, and so on for the 138 pages which are occupied with the Botanical portion. 226 pages deal with the animal kingdom. Even the Parasites are described. A trifling error is to be seen in the title given to the plant of Dodder where Dodder is used to designate the Michaelmas Daisy. Trees are specimens treated of, but the sessile oak is misprinted *sessiflora*, instead of *sessiliflora*. There is an excellent photograph of an Oak trunk. The work can be cordially recommended. It is full of good material, and is a great improvement on many botanical text books.

STRASBURGER'S TEXT-BOOK OF BOTANY. Rewritten by Dr Hans Fitting (Bonn), Morphology; Dr Hermann Sierp (Cologne), Physiology; Dr Richard Hander (Stuttgart), Thallophyta, Bryophyta, Pteridophyta; Dr George Karsten (Halle), Spermatophyta. Sixth English Edition. Translated from the seventeenth German edition by W. H. Lang, M.B., D.Sc., F.R.S. Pp. 818, tt. 861, some coloured. Macmillan & Co., 1930; 31/6. The official plants mentioned under the natural orders are those of the British Pharmacopoeia, instead of those official in Germany, Austria and Switzerland. For assistance with these Dr Lang is indebted to W. O. Howarth. The confidence felt in this important work and its popularity among the teachers of Botany throughout the world are evidenced by the sales. Here it is no case of hashing up previously digested food, but from year to year adding new dishes, and in seeing that each article on the menu is the best obtainable. The first thing needed is to have the highest authority responsible for his section. Secondly, for English readers, to see that a competent translator is employed, and to make sure that the competency is not limited to the language but, behind that, that he has an adequate knowledge of Botany as a whole. Of these desiderata all have been acquired. Another most important matter is to have a fitting setting, and Macmillan's have most decidedly presented us a most valuable volume in a most acceptable guise. Its typography, its bibliography, and its most profuse and excellent illustrations are all of the first order. It is needless to go into details in describing this Text-book. One can safely say in no single item is there any defect. To those who possess it, it will be a vide-mecum, and those who search it for information will not leave it with any feeling of disappointment. We have already alluded to the coloured figures which are excellent though the colouring is a little on the sombre side. One cannot speak too highly of this splendid edition.

TEMPERLEY, W. Some Cheviotland Plants, Vasculum 27, February, 1931.

TEMPLE, AUGUSTA A. FLOWERS AND TREES OF PALESTINE. With 30 illustrations by R. Marion Reynolds. Society for Promoting Christian Knowledge. Macmillan & Co., 1929. There is a short Glossary, then the commoner wild flowers and trees of Palestine are mentioned and briefly described in alphabetical order. The characteristic flowers of Palestine, the thorny plants of which are many, the trees, and much useful information are given. The coloured drawings by Miss Reynolds have already been noticed in our pages. They are characterised by very tender and graceful delicateness. No traveller through the Holy Land should be without this small and delightful volume. *Ranunculus sphaerospermos*, which grows in the Jordan, is omitted.

THOMAS, R. N. Flora of Paper-Mill Lime Waste Dumps near Glasgow, Journ. Ecol., p. 333, August 1930. The species detailed are all natives. The Willows also included the rare hybrids × *S. secernata* = *phylicifolia* × *purpurea* and *S. caprea* × *phylicifolia*, var. *bicolor*.

THURSTON, EDGAR. BRITISH AND FOREIGN TREES AND SHRUBS IN CORNWALL. Pp. 288, tt. 42. Published on behalf of the Royal Institution of Cornwall by the Cambridge University Press, 1930; 12/6 net. This is a most delightful volume in which our member has brought together a mass of useful information. The writer, with all his kindly vigour, is vividly depicted on the front page. The introduction is particularly useful, since early references are given. The mining industry and its connection with wood used for smelting is described in some detail. The references to the early botanists are very acceptable. The chapter on Evidence of Place-Names of Woods in the Middle Ages is especially useful. Mr Morton Nance supplies notes on the Cornish Names of Trees and Shrubs. He quotes from an old Cornish Vocabulary (B. M. Cott MSS. Vesp. A. 14). A short sketch is given of the chief Cornish parks and gardens. The list of trees and shrubs is in alphabetical order and occupies 210 pages, excellent illustrations being supplied. Measurements of the larger specimens of the various species are given. Under *Calluna*, the authorities for the varietal names *pubescens* and *speciosa* might have been given. Koch, in another place, is wrongly given instead of Hull for the var. *pubescens*. I named the var. *speciosa*. Camellias, as might be expected, do well in Cornwall—a tree at Tiewood had 1200 white flowers. *Cotoneaster Simonsii*, as in other places, is seeding itself at Perranzabuloe. *Daboecia cantabrica* is also naturalised at the bottom of a valley from West Taphouse to Glynn Valley. The sweet smelling *Drimys Winteri* grows to nearly 50 ft. at Bosahan. There is a good figure of *Embrothium coccinium* 48 ft. high, as at Trevarrick Hall. *Erica lusitanica* is naturalised on the railway, but the locality is not mentioned. There is an array of Eucalypts. *Fuchsia Riccartoni* has naturalised itself in the Rocky Valley at Tintagel, etc. That most wonderful Hymalayan tree, *Magnolia Campbellii*, developed 500 blooms in 1921 at Bosahan. At Ludgvan, *Metrosideros lucida* flowers beautifully. *Polygonum polystachum* is another naturalised species. *Prunus communis* Huds. is said to be the wild plum, but does not *communis* = *P. spinosa* and *insititia*? I suppose *P. Padus* is only alien in Cornwall. The synonym *Pyrus domestica* should be added, or rather used instead of *Pyrus Sorbus*. At Ludgvan Rectory, the Waratah flowered splendidly as a plant 16 ft. high. There are good illustrations of the Cornish Elm, but its scientific name is *U. minor* Mill., not *U. nitens*, var. *stricta* Ait. This he holds is indigenous. The name of the Wheatley Elm is var. *sarniensis* (London) = var. *Wheatleyi* Rehd. A separate chapter is devoted to the Coniferae, and good photographs of *Cryptomeria japonica* and *Sequoia* are supplied. The book is a most welcome addition to one's bookshelves, and there it will not be a stationary occupant.

WASHINGTON, UNITED STATES DEPARTMENT OF AGRICULTURE. N. 112, 1930. The constant issue of these most useful contributions continues with unbated zeal. Dr Griffith, April 1929, issues a circular of 34 pages, on the production of Hyacinth Bulbs, which is full of practical instruction.

WATSON BOTANICAL EXCHANGE CLUB, 1929-30. Forty-sixth Annual Report. Hon. Sec., H. Stuart Thompson. 2020 plants were sent in. Distributor, E. C. Wallace. J. Groves supplies a memoir of Arthur Bennett, and there is another by the Secretary of Mr C. E. Salmon.

WEISS, Prof. F. E. The Problem of Graft Hybrids and Chimaeras. Biolog. Rev., v., 231, 1930. The Bizarria Orange, *Cytisus Adami*, *Crataegomespilus* are described, and their history given. Also *Pirocydonia*, *Pirocrataegus Willei*, *Amygdalopersica*. *Solanum* and *Lycopersicon* are others well detailed. Winkler in 1909 was able to record cases of reversion of certain branches of *Solanum tubingense* to *S. nigrum*, thus bringing his newly created graft hybrids into line with *Cytisus Adami*, etc. The Pelargoniums are also discussed.

WILLIAMS, R. O. Flora of Trinidad and Tobago. Part 2, Malvales. R. O. Williams and E. E. Cheeseman. Pp. 23-164, 1929. Dept. Agric. Govt. Printer, Trinidad; 6/-. Part 3. PARIETALES—GERANIALES. Pp. 165-196. OLACALES—SAPINDALES, 1930. A very useful publication in bold clear type, with generic and specific keys.

OBITUARIES.

Borodin, Ivan Parthevitch. Born at Novgorod in Russia, 1847; died at Moscow, 1930. He was educated at the University of St Petersburg, where he was professor of botany from 1887 to 1890. He was also for 30 years a professor at the St Petersburg Forest Institute. He founded the biological freshwater station at Bologoje in 1897. Professor Borodin made botanical journeys in Siberia and the Caucasus, and wrote standard books on his science.

Carrothers, Nathaniel. Born at Farmagh Lisbellaw, Co. Fermanagh, January 9, 1852; died at Belfast, April 24, 1930. He was an assiduous worker at the counties of Antrim and Down, and added the rare Orchid, *Spiranthes Romanzoffiana*, to the latter county. He paid special attention to the adventive species and made a study of the plants imported with foodstuffs or merchandise into Belfast. For 38 years he had been a valued member of the Belfast Club and for nearly as long a member of its Committee. In 1925 he was made the third recipient of their medal, which had been instituted as a recognition of distinguished services to Science. Mr Carrothers had a pleasing and modest personality and his kindly and willing services were much esteemed by his comrades.

Comber, John. Born 1869; died 1930. Son of Edward Comber of Myddleton Hall, Lancashire. For the last nineteen years he had resided at Guildford. He was a well-known archaeologist, and had written 9 volumes on Sussex families, but he was also fond of British Botany and formed an Herbarium of 2000 sheets which will find a home in the Department of Botany, Sheffield.

Dorman, Sir Arthur John, Bart. Born at Ashford, Kent, August 8, 1848; died 1931. In 1868 he went to the north of England as an apprentice to the iron-making firm of Richardson, Johnson & Co., South Stockton. In 1876 he entered into partnership with Albert de Lande Long, and founded the firm of Dorman, Long & Co. Here was developed an enormous trade in bridge-building, steel and wire-work. In 1899 the firm was further enlarged by incorporating Bell Bros., of Cleveland, and subsequently many other undertakings. For many years Sir Arthur was an Alderman of the North Riding County Council. He had his K.B.E. in 1918, and was made Baronet in 1923. His fine estate at Grey Towers is a home for *Lathraea clandestina* (see *Rep. B.E.C.*, 751, 1928).

Engler, Heinrich Gustav Adolf. This eminent botanist was born at Sagan in Silesia, on March 25, 1844, and died at Berlin, October 10, 1930. He took his Ph.D. at the University of Breslau in 1866, the thesis being a Monograph of the genus Saxifraga, his earlier education having been at Goepperlander Fermn under Cohn. In 1871 he became Custodian of the Botanical Institute at Munich. There he began a series of important additions to Systematic Botany—among them his elaboration of Martius' portentous work, the "Flora Brasiliensis." Kiel, and afterwards Breslau, had the advantage of his services as Professor, and there he founded the "Botanische Jahrbücher für Systematik Pflanzengeschichte und Pflanzengeographie." In 1889 he was fittingly chosen to fill the chair at Berlin, on the death of Prof. Eichler. Here his great powers had full scope, and with a valued series of collaborators the "Die Natürlichen Pflanzenfamilien" came into being. This is the rival of Bentham and Hooker's "Genera Plantarum," treating of the whole of the vegetable kingdom and the natural families, which has had a very wide range of acceptance throughout Europe, and even in Britain it has made great headway. The "Syllabus der Pflanzenfamilien" went through ten editions; in that of 1924 he had the assistance of Dr E. Gilg. There is no doubt that the "Pflanzenfamilien" was written in a fuller and more attractive manner than the arid verities of the "Genera Plantarum" showed. Engler also edited and produced, with the pecuniary aid of the Prussian Academy of Science, over a hundred volumes of "Die Vegetation der Erde," and the most useful "Pflanzenreich," which has driven out of the field the De Candolleian "Prodromus." This enormous literary work did not prevent Engler from building up a great Museum and foundation of the rich Botanical Garden at Dahlem-Berlin, the latter benefitting to a very great degree from Engler's travels in the tropics and from his wide range of friends the world over, and no more worthy sepulchre could be found for so distinguished a scientist to occupy. He kindly named my Saxifrages in 1889, and determined one I gathered on the south-eastern ridge of Ben Lawers as *Saxifraga groenlandica*, a plant new to Scotland. He told me he thought *S. sponhemica* was a good species. He travelled very widely, and delighted to help his fellow workers.

GODFERY, HILDA MARGARET. Born 1871; died at Guildford, September 17, 1930. Daughter of the late Henry Simpson, M.D., of Conway. Her very beautiful paintings, which we are glad to see are to be published by the Cambridge University Press, received the Gold Medal of the Royal Horticultural Society.

GRIERSON, ROBERT, of Glasgow. Born at Clondalkin, Dublin, and educated at Armagh School; died 1930. Coming to Glasgow, he served his apprenticeship as solicitor in the office of Theyden, Strang & Girvan, and in 1886 was appointed their Procurator. He was a member of the Natural History Society of Glasgow and acted for some time as the Treasurer and member of the Council. Botany was his hobby, although he made it very much his business, and he became one of the pioneers in the study of the alien flora of the Glasgow district. As a result of his work, many new and interesting species were added to the Clyde records, among them being a moss new to science. He did valuable work in the preparation of the Clyde Card Catalogue for the visit of the British Association to Glasgow in 1928. Nearly all his gatherings passed through my hands to name. A few of these were new to our List, and notices of them from time to time were published in our annual Report. His health gave way and he went to live in Dublin, where to the last he interested himself in the flora. The paper published after his death in *The Glasgow Naturalist*, vol. ix., pp. 5-51, 1929-1930, entitled "The Clyde Aliens," is an extremely good compilation in which he gives the chief areas yielding them. Included is a Moss new to the area, *Hypopterygium atrotheca* Dixon. This grew under the Tree Ferns on the Kibble. There are a very large number of adventives included in the list.

HENRY, AUGUSTINE. Born on July 2, 1857; died in Dublin, March 23, 1930. Educated at Queen's Colleges, Galway and Belfast, he took his L.R.C.P. from Edinburgh, and became M.A. of Cambridge and the Royal University of Ireland. From 1882-1890 he was in China as an Imperial Maritime Customs Medical Officer to the Customs station at Ichang. In 1888 he explored the practically unknown district of Hupek, which afforded 20 new genera, and 500 new species. Here he found the charming tree, *Davidia*, seeds of which were afterwards sent to Veitch by Ernest Wilson. In 1890 he returned to Europe but next year he again went to Shanghai, exploring Formosa, not then in the hands of Japan. In 1896 he studied Forestry at Nancy in France, and then went as reader in Forestry to Cambridge University. With H. J. Elwes was begun the valuable work on "The Trees of Great Britain and Ireland," 1906-1913, which included many of the foreign species which have been introduced. So much was this work appreciated, that it now stands at over four times its published price. From 1913-1926, he was Professor of Forestry in the College of Science, Dublin. He travelled widely, and his journeys in China were rewarded by the discovery of many interesting species which have been successfully introduced into Great Britain. He married (for the second time) a daughter of Sir Lauder Brunton, Bart. To our pages he contributed some excellent papers, and he was always very kindly disposed to our *Report*. I think in after times we feel that his interpretation of Miller's Elms left much to be desired, but he was not willing to reopen that page, wrong though he practically acknowledged it to be. It was evident that Moss and Henry used the name *U. minor* in a different meaning, since both could not be correct. A parallel case was a specimen of *Orchis latifolia* sent to the Rev. E. S. Marshall, who said it was good *incarnata*, but Linton thought that it was typical *latifolia*. As a matter of fact, both plants were *praetermissa*. So, too, *Ulmus minor* was really *stricta* Lindley, and *U. Plotii* was a distinct species. His work on the Poplars was decidedly valuable, and he laboured—not unsuccessfully—to show the virility of the first hybrids. His cheery presence and geniality will be greatly missed, and he had that optimism which carried not only himself but many of his friends into new fields of observation.

Hurry, J. B. Born 1868; died February 15, 1930. Formerly Medical Officer of Health for Reading, he instituted a wild-flower garden at Reading in which were many medicinal plants. He was a member of our Society for some years. He was especially interested in the Woad (*Isatis*), on which he had compiled valuable material, and has recently issued a well illustrated volume.

Holmes, Edward Morell. He was born at Wendover, Bucks, pleasantly situated at the foot of the Chiltern Hills, in January 1843, and died at Sevenoaks, September 10, 1930. His father was a Congregational Minister of Huguenot descent. Edward was educated at Boston Grammar School, and subsequently at Wimborne Grammar School, where, although he won a prize for Greek, his nonconformity was held a reason for awarding it to a lower boy. When only fourteen years of age he was apprenticed to a chemist and druggist in Cheyne Walk, Chelsea, where he met the Sage of Chelsea as a customer. After a short service of two years he passed the minor examination of the Pharmaceutical Society, when he was only seventeen, the youngest graduate to that date. This was done after only one course of lectures at the Pharmaceutical Society. Holmes was essentially one of those who studied for himself, with its immense compensating advantages and yet with some inevitable drawbacks. In 1863 while at Plymouth he won the Herbarium Medal, with only fourteen fewer plants than those sent in by the Silver Medallist. In after days he himself served as examiner for the competition. Like myself, he was proxime for the Pereira Medal. His knowledge of drugs was widely recognised. He was an F.L.S., Fell. Bot. Soc. Ed., Royal Hort. Soc., Hon. Member Essex Field Club, Corresponding Member Glasgow Nat. Hist. Soc., V.-P.S.E. Union Sc. Soc., Flückiger Gold Medallist, and Hanbury Medallist, 1915. To the *Victoria County History* he contributed papers on the Cryptogamic Botany of Cornwall, Devon, Hants, Dorset and Kent. For his native county of Buckinghamshire, when I was writing the Botany for that county, he generously gave me his notes on its Cryptogamic plants; among those *Ramalina farinacea*, f. *phalerata*, was discovered by Holmes from Stowe Park. Holmes was a rapid and indefatigable walker, his quick sight detecting plants as he was racing along at five miles an hour. It was a revelation to see him wading in shallow sea-water after the algae, many new ones being added by him to the British List. In his home in Kent, his garden contained many rarities, and he took up the question of drug growing during the war with enormous, indeed, with almost too great, zeal. In the 'nineties, when I was an examiner, I saw much of him and of his work at Bloomsbury Square. Rarely had a Museum a more useful Curator, and his services received a public thanks by the Council. His wife, Catherine Appleford, who survives him, was a worthy help-mate, and herself was a very competent Lepidopterist. A few years back Holmes was knocked down by a motor car and his foot had to be amputated, but although this and his painful arthritic troubles limited his walking powers he continued to the last in full possession of his faculties, and his love for his Sevenoaks garden knew no diminution. He had the consolatory thought that his ready and eager services have been given so generously to a wide and sympathetic circle of Pharmacists throughout the world. He was honoured by many foreign Societies. When I began collecting specimens he helped me in naming them, albeit not always correctly. I remember *Anthoxanthum* was wrongly identified as *Agropyron repens* and my specimen of *Conringia orientalis* was labelled *Brassica*.

Moss, Charles Edward. Born 1872; died 1931. The son of a Nonconformist minister, he was born near Stockport, on February 7, 1872. He became a teacher under the Halifax Education Committee, and later a student at the Old Yorkshire College where, with Dr W. G. Smith, he mapped the vegetation of the Yorkshire moors in 1903. He had also frequently contributed to, and assisted in editing, the Halifax Naturalist. Then he became Science Master at Sexeys School, Bruton, for two years, and in 1907 published " The Vegetation of the Bath and Bridgwater District." In order to obtain his doctorate in 1906-7 he went to Manchester. There he published his studies of " The Peat Moors of the Pennines," and in 1913 this appeared as a separate volume, enriched with copious ecological details. In 1910, in collaboration with W. M. Rankin and A. G. Tansley, a valuable paper on " The Woodlands of England " was prepared. His next move was to Cambridge, to which he went as Curator of the Herbarium, and, as is not unusual with such Institutions, at a totally inadequate salary, but the appointment bore promise of future rewards. At Huntingdon, a retired solicitor, E. W. Hunnybun, had for some time been making drawings of our English plants. They were quite charming as drawings but were defective in detail. He offered them to me in order that the Delegates of the Clarendon Press might publish them as a new Sowerby. This they were not willing to do, nor could I strongly advise them to publish such inadequate drawings. They were shown to Moss, and he thought them worthy of reproduction, and his vivid personality induced the Cambridge University Press to undertake the work. At that time we were in close relationship, and in a very large number of ways I helped him. His first idea was that we should jointly prepare the text. This he afterwards thought should be brought out in his name alone as he considered it might bring him a College Fellowship, but he supplied a long list of Families which he wished me to write for the Flora. Notwithstanding his methods I prepared the genera *Montia* and *Cerastium* for the second volume, but as the material for it had already taken up the allotted space they did not appear until the third volume. The first volume had been postponed. It is generally admitted that, notwithstanding the large amount of excellent worth he had put into it, the Flora was not a success. It was on a too pretentious scale, and the action taken by the Cambridge Press, of ceasing the publication, especially after the rancorous expressions in the preface to the last volume, was distinctly wise. This preface was written at a time when he had serious domestic trouble and the tone displayed was, perhaps, due to overwork and worry. Later he went to South Africa and became Professor at the South African School of Mines and Technology at Johannesburg. Here he did good work, especially at the Taxonomic side of Botany, and for ten years made an intensive study of the Flora of the Transvaal and adjacent territory. There is no doubt that if his life had been prolonged he would, with his incisive mind, have made most substantial additions to our knowledge of the flora of that country. His premature and regrettable death was caused by a lung hemorrhage at the early age of 58. There is a very good and appreciative memoir of him by Mr J. Ramsbottom in *Journ. Bot.*, 20, 1931.

OSTENFELD, Prof. CARL EMIL HANSEN. Born 1873; died 1931. In 1911 he came to Britain with the International Phytogeographical Excursion, travelling with us for nearly six weeks round Great Britain, when he was certainly one of the most active of the field workers. He had an excellent knowledge of North European plants. He it was who showed us the white water-lily, *Castalia alba*, var. *occidentalis* (which was at first thought to be *candida*). He also pointed out the *albescens* form of *Sonchus oleraceus*; the yellow-berried form of *Pyrus Aucuparia*; the hybrid of *Erica Mackayi*, which he named × *E. Praegeri* Ost., and *Alchemilla acutidens*. His paper in our *Report* was a very valuable one. He confirms *Euphrasia minima* as British, and in this he is supported by Dr Wettstein. He was also a visitor to the British Association meeting at Dundee. He went to Australia with the British Association, but he broke his ankle on the outward voyage, so he was prevented from attending most of the meetings. With his wife he was present at the Botanical Congress at Cambridge in 1930, and he delivered the Master's Lectures in 1927, the subject being "The Present State of Knowledge on Hybrids between Species of Flowering Plants." He also has published notes on the Cytology in *Hieracia*, etc. When I was at Copenhagen, I visited the fine Herbarium at the Botanic Gardens, and we spent some time in looking at the Palmate Orchids, which are well represented in it. He fully agreed with me as to the distinction of *Orchis maculata* and *Fuchsii*. He wrote the Taxonomy for Warming's "Flora of the Faroes," which is an excellent piece of work. He contributed special papers to the Reports of the Phytogeographical Society. On our long journey together through Britain one became greatly attracted to him, and one could give him whole-hearted affection and gratitude for his excellent field-work. The Society suffers the loss of one of its most useful Honorary Members.

ROBERTSON, ARCHIBALD, The Very Rev. the Lord Bishop of Exeter, D.D., LL.D. He was born at Sywell Rectory, Northants, June 29, 1853, and died at Oxford in March 1931. He was educated at Bradfield College, Berks, and then came to Trinity College, Oxford. He took a first class in Lit. Hum. in 1876, and became Dean of his College in 1879-1883. He was greatly interested in the local flora, and in my second year at

Oxford I made his acquaintance and together we scoured the countryside pretty thoroughly, another Trinity Don, Franklin T. Richards, often being one of the party. Mr Armstrong, of Queen's College, and Dr Robertson, added *Phegopteris Dryopteris* to the County of Bucks from Bollard's Wood. I remember vividly the task of rediscovering the small patch of it in that large wood. He was also one of the last of Oxford botanists to see *Ophrys Sphegodes* near Burford. In 1883 he went with me to Scotland, and in order to be near the mountains of Aberdeen and Angus we slept at a keeper's cottage in Glen Callater. I had told him that there we should meet one of the great ladies of Britain. " What, in a keeper's cottage as a keeper's wife," he said. Here we enjoyed the kindly housekeeping of Mrs Michie. A few days after leaving Callater he said, "You were quite right; she is a great lady." As a young girl she had been for some time coffee-room maid at Balmoral, and this lonely keeper's cottage was frequently made use of by Queen Victoria, where she would do her sketching, and Mrs Michie would prepare tea for the party, but whether to the Queen or to her Minister, the Duke of Richmond, or to more humble folk, she kept her head with an unflurried dignity. I can still in my mind's eye see the fireplace with its dark glossy crimson earthenware tea-pot put there to " draw," and very strong was its contents, carrying with it the strong flavour of cloves to give an added pungency. In this small cottage she brought up a large family. They were six or seven miles from Braemar, and in winter time there was severe privation. Once they were snowed up for a fortnight, and it was three days before they could get food supplies to the dog kennels. It was a grand view that opened out from the door-way, with the foreground occupied by the long level of Loch Callater. Corrie Kander lay nearly at its head. The waterfall coming from its upper rock marks the habitat of many a rare alpine, but it is not an easy climb. Tolmount, the mountain which is the water-parting of Aberdeen and Angus, fills up the view at the southern end. From Callater we climbed all those splendid hills—Lochnagar, Tom Buidhe, Glasmeall, Tolmount, leading to Glen Dole, Glen Fiagh, the magnificent Glen of Caenlochan and Little Culrannoch, the home of *Lychnis alpina*, and what a gathering of rarities we made. Passing through Blair Athol on our homeward way, he found a letter awaiting him offering him the Principalship of Bishop Hatfield's Hall, Durham, which he held with distinction from 1883 to 1897. Then he became Vice-Chancellor of the University of London from 1897-1903. From that date he was Lord Bishop of Exeter, 1903-1916, an office which he filled with dignity and with a steady purpose which had a greatly beneficial influence upon that Diocese. He was made Hon. D.D. of Durham in 1892, and LL.D. of Glasgow in 1901. He published many able and thoughtful theological works. In 1916, owing to a distressing attack of paralysis, he resigned his Bishopric and took up his residence at Oxford where, during the fourteen years of failing powers, he kept up his love of Botany. I used to show him the new discoveries of British plants, even when a bath-chair was his mode of locomotion. He liked to know all about them.

ROBINSON, WILFRED. The son of J. Fraser Robinson, the author of the "Flora of the East Riding of Yorkshire," he was born in 1884, and died at Aberystwyth in 1930. He was a research student at Manchester, where he became Lecturer in Economics, and Senior Lecturer in Botany. In 1926 he was appointed Professor of Botany at Aberystwyth University College. He was specially interested in the physiology of the Marine Algae. His premature death is greatly to be regretted.

WATT, Sir GEORGE, C.I.E., LL.D. Born at Meldrum, Aberdeen, 1851; died at Lockerbie, Dumfries, April 2, 1930. He was educated at Aberdeen and Glasgow. He was elected as the first Professor of Botany in the University College, Calcutta, in 1873. His great work was the "Dictionary of Economic Products of India," in nine volumes. For his services in organising the Delhi Exhibition of India he received the honour of Knighthood. In 1907 he published "The Wild and Cultivated Cottons of the World," and, in 1908, his handbook of the "Commercial Products of India." He also wrote a Monograph of the Primula.

WILSON, ERNEST H., V.M.H., M.A., D.Sc. Born at Campden, Gloucestershire, England, February 15, 1876; killed in a motor accident with his wife near New York, October 15, 1930. He was an Honorary M.A. of Harvard; D.Sc. of Trinity College, Connecticut, and Fellow of the American Academy of Arts and Science. He was educated at the Royal College of Science, then he went to the Botanic Gardens at Edgbaston and Kew. In 1899, under the auspices of Messrs Veitch, Wilson went to China and collected assiduously. In 1905 he published "Leaves from My Chinese Note-Book," and what a set of choice plants he discovered and brought home. The lovely *Rosa Moyesii* and its var. *rosea*, *Buddleia Davidii*, var. *magnifica*, *Berberis Wilsonae*, *Dipelta floribunda*, *Hydrangea Sargentiana*, *Salix magnifica*, are only a trifle of the wood perennials we owe to him. Sargent in "Plantae Wilsonianae," enumerates 705 new species and varieties, representing 429 genera, four of the latter being new. When Wilson and Rehder began the task of arrangement they were faced by 50,000 herbarium sheets which were gathered for Harvard University. His Rhododendrons have been mostly raised at Warley Place and Caerhays Castle, and a magnificent set they form. He was not less fortunate in his discovery of herbaceous plants, especially *Lilium regale* (probably the most popular Lily in North America, to which country he introduced it), *Paeonia Willmottiana*, *Thalictrum dipterocarpum*, *Aconitum Wilsoni* and *Hemsleyanum*, *Astilbe grandis*, *Buddleia Davidii*, *Artemisia lactiflora*, *Senecio clivorum*, *S. Wilsoni*. Very many Primulas were additions, including the almost unique *Cockburniana*. In addition to the magnificent *Lilium regale*, he added many other species, which are mentioned in his Monograph of the Lilies of Eastern Asia. His second visit to China resulted, at no small cost to himself, in securing the grand *Lilium regale* and the glorious yellow Poppy, forerunner of the blue genus. These and other treasures helped to make the Arnold Arboretum—aptly termed America's greatest garden—the rich home of rare and beautiful trophies culled in many lands. His published works were many, but he had not the literary style of Farrer to make them so easily readable. They included " A Naturalist in Western China," 1913; " Plant Hunting," 1928, which has been reviewed in these pages (it included the results of his tour through S. Africa, India, Ceylon, Australia, Tasmania and New Zealand, and forms one of the most readable of his works); " The Romance of Our Trees," 1920; " America's Greatest Garden," 1925, which gives a good account of the Arnold Arboretum; " Aristocrats of the Garden," 1916; " More Aristocrats of the Garden," 1928; " The Conifers and Taxas of Japan," 1915; with Rehder, a " Monograph of Azaleas," 1921; " Cherries of Japan," 1915; "Lilies of Eastern Asia," 1925. He received the Victoria Medal of Honour, the Veitch Memorial Medal, and the G. R. White and Hilaire Medals. In 1919 he became assistant to Sargent at the Arnold Arboretum, and on his death in 1927, Wilson became its Keeper. On October 15, 1930, as he and his wife were motoring back from visiting their daughter, the car skidded on some wet leaves, shot across the footpath and through a wooden fence at the top of an embankment 40 ft. high. The car then turned over in the air and, plunging downwards, landed bottom upwards against the mill wall at the foot of the bank, pinning the two occupants under the body. Mrs Wilson (née Ellen Ganderton of Edgbaston), was killed outright, and Mr Wilson died shortly after he had been taken to the adjacent Worcester Hospital. Their dog leapt from the car in its downward flight and escaped unhurt. Wilson was a frequent contributor to the *Gardeners' Chronicle*. His second expedition to China was in 1914, and in 1919 he went to Korea and Formosa. It will be remembered that owing to a landslide when searching for *Lilium regale* he broke his leg. His funeral was very largely attended by prominent horticulturists, and the floral tributes were numerous and beautiful.

WREN, RICHARD CRANFIELD, J.P., F.L.S. Born in 1861; died at Westcliff-on-Sea, July 24, 1930. He was a member for a few years, but his interests were not Botanical. He entered the firm of Potter and Clarke in 1883, becoming a partner in 1896, and subsequently a Director of that firm, which specialised in drugs. He wrote for the " Potter's Cyclopedia of Botanical Drugs," which went through three editions, the last one having been prepared with the assistance of E. M. Holmes. Mr Wren in later years visited South and West Africa and Canada.

NEW COUNTY AND OTHER RECORDS.

ABBREVIATIONS.—*Rep. B.E.C.=Report of the Botanical Society and Exchange Club; Trans. Bot. Soc. Edin.=Transactions of the Botanical Society of Edinburgh; Wats. B.E.C.=Report of the Watson Botanical Exchange Club; Devon. Tr.=Transactions of Devonshire Association of Science, &c.; Journ. Bot.=Journal of Botany; Nat.=Naturalist; N.W. Nat.=North Western Naturalist*, ed., A. A. Dallman; *W.F. Mag.=Wild Flower Magazine*, ed., Mrs Dent; *Fern Gaz.=British Fern Gazette*, ed., F. W. Stansfield; *Rep. Marlb.=Report of the Marlborough College Natural History Society; R.I.C.=Journal of the Royal Institute of Cornwall; Rep. Winton.=Report of the Natural History Society of Winchester College;* †=Adventive; *=New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names or before a binomial means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Vice-county in *Topographical Botany*; [] enclosing a record mean that confirmatory evidence is needed.

We have to thank the Director of the Royal Botanic Gardens, Kew; Mr J. Fraser, Mr W. O. Howarth, Prof. C. H. Ostenfeld, Prof. O. E. Schulz, Dr Probst, Dr Ronniger, Dr J. Murr, Dr E. Almquist, Dr H. Schinz, M. Jaquet, Dr Aellen, Dr Drabble, Mrs Gregory, Mr C. E. Britton, Dr Dahlstedt, M. Patrice de Riencourt de Longpré, Col. A. H. Wolley-Dod, Mr I. A. Williams, Dr Zahn, Mr W. H. Pearsall, Mr H. W. Pugsley, Mr A. R. Horwood, Mr W. Watson, Mr D. Lumb, Mr C. V. Marquand, Rev. H. J. Riddelsdell, and others who have rendered critical assistance.

1/1. CLEMATIS VITALBA L. Canal-side, Berwyn, Denbigh. WEBB.

2/4. THALICTRUM MAJUS Jacq. Yaton Sluice, S. Northumberland, HESLOP HARRISON in *Vasculum*, 118, 1929.

6/4. RANUNCULUS AURICOMUS L., var. RENIFORMIS Kittel. Newton Longville, Bucks, DRUCE.

6/6. R. LINGUA L., var. GLABRATUS Wallr. Freshwater, Isle of Wight, P. M. HALL.

6/7. R. FLAMMULA L., var. ANGUSTIFOLIUS Wallr. Widdy bank, Durham, DRUCE; Thursley, Surrey, J. G. LAWN.

Var. OVATUS Pers. Near Kingthorpe Pickering, N. Yorks, FLINTOFF.

6/10. R. SARDOUS Cr. Tidford, E. Cornwall, THURSTON. The type.

6/12. R. OPHIOGLOSSIFOLIUS Vill. In considerable quantity this year in Gloster, and seeding freely, DRUCE.

6/13. R. PARVIFLORUS L. Near Gotham, Notts, BULLEY.

6/19. R. FALCATUS L. Wool-waste, Wheatley, Halifax, LEES MS.

(The BATRACHIA have been named by W. H. PEARSALL.)

6/20. R. FLUITANS Lam., var. CAMBRICUS (Ar. Benn.) Dr. In Llyn Coron (locus classicus), but in smaller quantity than formerly, 1930, DRUCE.

6/23. R. DROUETII F. Schultz. Grangemouth, Stirling, DRUCE.

6/24. R. HETEROPHYLLUS Weber, var. SUBMERSUS Bab. Tobber, Co. Clare, O'KELLY.

6/26. R. PSEUDO-FLUITANS B. & F. River Ely at St Faggans, Glamorgan, Miss VACHELL.

6/28. R. BAUDOTII Godr., var. MARINUS (A. & F.). Moat of Cardiff Castle, Glamorgan, Miss VACHELL.

6/29. R. TRIPARTITUS DC. St Mewan, E. Cornwall, TRESIDDER (an interesting new locality); Bilstone, Devon, Rev. W. KEBLE MARTIN in *Dev. Rep.*

6/33. R. FICARIA L., var. (or sub-var.) ALBIFLORA Druce. Marlborough, Wilts, Mrs WEDGWOOD; Helston, Cornwall, known for over forty years since which from a single plant it has increased now to 40-50 plants, showing its permanence. Found by Mr R. Kempthorne. "Petalis albis," 1931, G. C. DRUCE.

*7/2. CALTHA RADICANS Forster. Near Llyn Coron, Anglesey, DRUCE.

†9/2. HELLEBORUS FOETIDUS L. Walmer Shrubbery, E. Kent, CASTALIA, Countess of GRANVILLE.

†13/3. DELPHINIUM AJACIS L., flore pleno. Hillside, S. Lancs, HOLDER and WAGSTAFFE.

20/1. CASTALIA ALBA (L.) Link, var. OCCIDENTALIS (Ost.). Mallaig, Morar, Westerness, WEBB.

21/2. PAPAVER RHOEAS L., var. CAUDATIFOLIUM Fedde. Flowers pale pink. Brighton Downs, E. Sussex, Miss ROBINSON.
†Var. WILKESII Druce. Pixey's Mead. Hortal, Oxford, DRUCE.

21/4. P. LECOQII Lam. In great abundance near Cothill, Berks, DRUCE; near Hitchin, Herts, Mrs MACALISTER HALL. We both noticed independently that while the fresh plant has the yellow sap, in a few hours after being picked it loses the yellow tint. In my case it was so marked that I had to go back the next day to see if I had not picked *dubium* by mistake.

21/6. P. HYBRIDUM L. Bristol, W. Gloster, C. & N. SANDWITH. By an accident it is omitted from the Northants Flora. "First record. Rev. M. J. Berkeley, Oundle. Stone Pits, Yardley Hasting, ROGERS."

28/1. ESCHSCHOLZIA DOUGLASII Walp. Pixey's Mead. Hortal on refuse, Oxford; waste ground, Grangemouth, Stirling, DRUCE.

32/4. FUMARIA PURPUREA Pugsl. Beaumaris, Anglesey, 1930, DRUCE.

32/9. F. BASTARDI Bor. *Axbridge, N. Somerset, C. & N. SANDWITH; Holyhead, Anglesey; Drummore, Wigtown, DRUCE.

35/2. RADICULA SYLVESTRIS (L.) Dr. Ringwood, S. Hants, L. B. HALL.

†39/6. CARDAMINE TRIFOLIA L. Underby, Westmorland, Mrs LAURENCE DRUMMOND.

*43/4. DRABA MURALIS L. Bosahan, Cornwall, Miss CLARICE VIVIAN.

*44/1. EROPHILA MAJUSCULA Jord. Bishop's Teignton, Honiton, Devon, Rev. W. KEBLE MARTIN.

45/4. COCHLEARIA MICACEA E. S. Marshall. In the river-bed between Tyndrum and Crianlarich, Perth, DRUCE; at 2500 ft. on Micklefell, Yorks, LEES.

45/6. C. SCOTICA Druce. Loch Ness, Easterness, 1921, WEBB.

†46/1. TETRACME QUADRICORNIS Bunge. Alien. Wool-waste, 1890, *Halifax Fl.*, 305, 1904.

†49/3. SISYMBRIUM ALTISSIMUM L. Beaumaris, Anglesey, etc., Miss ARMITSTEAD; Grangemouth, Stirling, DRUCE.

†49/4. S. ORIENTALE L. Near Burton-on-Trent, Derby, DRUCE.

49/6. S. OFFICINALE (L.) Scop., var. LEIOCARPUM DC. Burton-on-Trent, Staffs; Grangemouth, Stirling, DRUCE.

†51/1. CONRINGIA ORIENTALIS (L.) Dum. Tresillian, Cornwall, in garden ground, C. NICHOLSON; Gallows Point, Penros, Beaumaris, Anglesey, Miss ARMITSTEAD.

†54/20. BRASSICA GALLICA (Willd.) Dr. Bristol, W. Gloster, C. & N. SANDWITH; Grangemouth, Stirling, DRUCE.

†55/2. Diplotaxis muralis (L.) DC. Rhosniger, Beaumaris, Anglesey, Miss Armitstead.

(The Bursa have been kindly determined by Dr E. Almquist.)

59/2. B. abscissa (E. At.). Hitchin, Herts, H. Phillips.

59/4. B. batavorum (E. At.). Pegsdon, Beds; Hitchin, Herts, H. Phillips; Forbury, Berks; Logan, Wigtown, Druce.

59/5. B. belgica (E. At.). Forbury, Berks, Druce.

59/6. B. bremensis (E. At.). Pampisford, Cambs, H. Phillips.

59/7. B. Brittonii (E. At.). Clifton, Beds, H. Phillips; Burton-on-Trent, Staffs; Drummore and Logan, Wigtown, Druce.

59/8. B. concava (E. At.). Waste heap, Welwyn, Herts, H. Phillips; Walton, Lancs, Travis.

59/9. B. Druceana (E. At.). Hitchin, Herts, H. Phillips; Trearddur Bay, Anglesey; Market Harborough, Leicester; Devizes, Wilts, Druce.

59/10. B. gallica (E. At.). Callander, W. Perth; Drummore, Wigtown; Loddon Bridge, Berks, Druce.

59/12. B. grossa (E. At.). Hitchin, Herts, H. Phillips.

59/16(2). B. laevigata E. At. Netherton, S. Lancs, Travis; Garston, Berks, Miss Todd; Market Harborough, Leicester; Loddon Bridge, Berks; Killin, M. Perth; Creetown, Kirkcudbright; Drummore, Wigtown, Druce.

59/17. B. mediterranea (E. At.). Hitchin, Herts, H. Phillips; Sapperton, E. Gloster, Druce.

59/20. B. patagonica (E. At.). Hitchin, Herts, H. Phillips; Devizes, Wilts; Oxford, Druce. This is the Burgh St Margarets, Norfolk, plant of Rev. R. J. Burdon. See *Rep. B.E.C.*, 222, 1929.

59/20(2). B. pergrossa (E. At.). Waste heap, Welwyn, Herts, H. Phillips.

59/24. B. robusta (E. At.). Welwyn, Herts, H. Phillips.

59/26. B. trevirorum (E. At.). Hitchin, Welwyn and Wymondley, Herts, H. Phillips; Wilbury Hill, Beds; Denham, Bucks; Barras, Westmorland, Druce.

59/27. B. turoniensis (E. At.). Hitchin, Herts; Brandon, E. Norfolk, H. Phillips; Grangemouth, Stirling, Druce.

59/28. B. VIMINALIS (E. At.). Denham, Bucks, DRUCE.

†60/1. CORONOPUS DIDYMUS Sm. Gallows Point, Beaumaris, Miss ARMITSTEAD.

†61/3. LEPIDIUM DRABA L., var. SUBINTEGRIFOLIUM Mich. Ilkeston, Derby, BULLEY; type increasing near the beach, Llanddona, Anglesey, Miss ARMITSTEAD.

†61/8. L. PERFOLIATUM L. Birkdale, S. Lancs, HOLDER and WAGSTAFFE.

66/1. TEESDALIA NUDICAULIS (L.) Br. Plentiful near Gainsborough, N. Lincs, H. B. WILLOUGHBY-SMITH.

†68/1. ISATIS TINCTORIA L. Burton-on-Trent, Staffs, DRUCE and CURTIS.

†79/1. ERUCARIA HISPANICA (L.) Dr. Splott, Cardiff, Glamorgan, R. L. SMITH.

†82/2. CHORISPERMUM TENELLUM Br. Bristol, W. Gloster, C. & N. SANDWITH; Burton-on-Trent, Staffs, DRUCE.

†83/1. CLEOME SERRATULA Pursh. Sydenham Station, Co. Down, C. D. CHASE in *Ir. Nat.*

†85/1. RESEDA ALBA L. Bude, Cornwall, Rev. J. H. ADAMS.

†85/5. R. STRICTA Pers. Splott, Cardiff, Glamorgan, R. L. SMITH.

88/3. VIOLA SILVESTRIS Lam., var. PUNCTATA Druce. Andoversford, W. Gloster, Miss ABELL; Riever Wood, Berks, and N. Wilts, DRUCE.

88/4. V. RIVINIANA Reichb., var. DIVERSA Greg. The Lizard, Cornwall; Stonesfield, Oxon, DRUCE; Knebworth, Herts, small form, H. PHILLIPS.

Var. NEMOROSA Neum. Knebworth, Herts, H. PHILLIPS; Bix, Oxon; Bradenham, Bucks, DRUCE.

Var. MINOR Greg. Br. Viol., p. 63. Woodborough, Notts, BULLEY.

× SILVESTRIS = INTERMEDIA Reichb. Albury, Herts; Shefford Woodlands, Berks, DRUCE.

88/5. V. RUPESTRIS Schmidt, var. GLABRESCENS Becker. Ogmore Downs, Glamorgan, Miss VACHELL.

88/6. V. CANINA L., var. PUSILLA Bab. Hitchin, Herts, H. PHILLIPS.

× LACTEA Sm. = PUMILIFORMIS R. & F. Gower, Glamorgan, Mrs DAVID.

88/7. V. LACTEA Sm. Gower, Glamorgan, Mrs DAVID.
×RIVINIANA=V. CURNOWI Druce. The Lizard, Cornwall, 1929, DRUCE.
×RIVINIANA=var. DIVERSA. The Lizard, Cornwall, DRUCE, det. P. M. HALL.
×CANINA. Hatchett's Pond, S. Hants, P. M. HALL.

88/8. V. ODORATA L., var. IMBERBIS (Leight.) Hensl. Cothill, Berks, DRUCE.
Var. DUMETORUM (Jord.). Tidbury Ring, near Bullington, S. Hants, P. M. HALL.
Var. SUBCARNEA Jord. With above.

88/9. V. HIRTA L., var. FOUDRASII (Jord.) R. & F. Farley Mount, S. Hants, P. M. HALL.
Var. INCONCINNA J. Briq. Stonesfield, Oxon, DRUCE.
Var. PROPERA (Jord.) Gillot. Farley Mount, S. Hants, P. M. HALL.
Var. VARIEGATA Greg. Farley Mount, S. Hants, P. M. HALL.
×ODORATA. Stonesfield, Oxon, DRUCE; Tidbury Ring, S. Hants, P. M. HALL.

88/12. V. EPIPSILA × PALUSTRIS = R. RUPRECHTIANA Borb. Caerphilly Mountain, Glamorgan, Miss VACHELL, teste Mrs GREGORY.

(The PANSIES have been kindly determined by Dr ERIC DRABBLE.)
88/15. V. VARIATA Jord., var. SULPHUREA Drabble. Highdown, Herts, H. PHILLIPS.

88/19. V. LEJEUNEI Jord. Mayfield, Sussex, Miss PICKARD.

88/22. V. AGRESTIS Jord. Hambledon, Bucks, DRUCE.

88/23. V. SEGETALIS Jord. Weed in Botanic Garden, Oxford, DRUCE; Walmer, E. Kent, CASTALIA, Countess of GRANVILLE.

88/25. V. LATIFOLIA Drabble. Tiverton, N. Devon, Col. WATTS in *Dev. Rep.*

88/27. V. ANGLICA Drabble. Walmer, E. Kent, CASTALIA, Countess of GRANVILLE; Hennoch, S. Devon, Miss LARTER.

88/28. V. DESEGLISEI Jord. Highdown, Herts, H. PHILLIPS.

89/2. POLYGALA VULGARE L., var. GRANDIFLORA. Gentian Hill, Galway; Blackhead, Co. Clare, very near to *Babingtonii*, DRUCE.

89/4. P. DUBIUM Bellynck. Hayle, Cornwall; Holyhead, Anglesey, DRUCE. This group needs further study. Wayting Hill, Beds, with intermediates, LITTLE.
Var. DUNENSE Dum. Near Port Talbot, Glamorgan, SMITH and MELVILLE.

92/2. DIANTHUS DELTOIDES L. Frilford Golf Course, Berks, Hon. Mrs GORE. Perhaps introduced with grass-seeds, since Col. Dr Smith found *Silene nutans* there also. Near Gomshall, Surrey, Mrs FARRANT, ex F. CLARKE.

†95/5. SAPONARIA ORIENTALIS L. Hull, S.E. Yorks, WATERFALL, teste LEES.

96/1. SILENE MARITIMA Sm. Farne Isles, Northumberland, T. R. GODDARD. Luxuriant specimens.

96/2. S. ANGUSTIFOLIA S. & T. Crinan Canal, Argyll, Mr RENNIE.

†96/2(2). S. COMMUTATA Guss. Alien, S. Europe. Shipley, Yorks, LEES MS.

†96/3. S. CONICA L. Burton-on-Trent, Staffs, DRUCE.

†96/5. S. ANGLICA L. Burton-on-Trent, Staffs, specimen approaching *S. gallica*, but having the small corolla of *anglica*, DRUCE.

†96/7. S. GALLICA L. Burton-on-Trent, Staffs, DRUCE.

98/1. LYCHNIS FLOS-CUCULI L. A pretty double-flowered form from Martham Broad, E. Norfolk, LEWIS R. LLOYD.

98/3. L. ALBA × DIOICA. Penalt Ferry, Glamorgan, Miss VACHELL.

98/4. L. DIOICA L. A much more variable species than is generally supposed. Miss Vachell sends from Glamorgan several forms. One is an autumnal state in which the plant has been cut over and the newer growth shows a much branched stem with numerous small flowers.

†98/10. L. CORONARIA (L.) Desr., var. OCULATA Lindl. Meanwood, Eaglestone [7874], LEES MS.

100/1. CERASTIUM ERECTUM (L.) Coss. & Germ. Gallows Point, Penrhos, Anglesey, 1930, Miss ARMITSTEAD.

100/3. C. ALPINUM L. Loch na Lairige, M. Perth, 2800 ft., typical, DRUCE.

100/5. C. VULGATUM L. (vel TRIVIALE), forma HANBURYENSE Druce. Leaves fleshy, glabrous, breaking readily. Stems with bifarious hairs, petals very slight, exceeding sepals. Found by Mr F. J. HANBURY near Thurso, and grown by him at Brockhurst for many years. At Potterne, too, it has retained its characters unchanged, DRUCE.

100/7. C. PUMILUM Curt. Plentiful and luxuriant this year, as on Durdham Downs, W. Gloster; Churn Downs, Berks, DRUCE.

100/9. C. TETRANDRUM Curt. South Stack, Anglesey, Miss VACHELL. Its luxuriant and semi-glabrous fleshy leaves and pentamerous state at first puzzled one. but it comes under my *luxurians.*

†100/12. C. TOMENTOSUM L. Grassington, Yorks, LEES !. A garden straggler.

101/3. STELLARIA MEDIA Vill., var. APETALA (Ucria). Bournemouth, S. Hants, L. B. HALL.

101/7. S. GRAMINEA L. A broad-leaved, short-petalled form, on the border of Llyn Coron, Anglesey, DRUCE.

†102/17. ARENARIA LARICIFOLIA Lapeyr. Hutton Conyers, Yorks, 1861, LEES.

103/1. SAGINA NODOSA (L.) Fenzl, with the var. (?) MONILIFORMIS Lange. Common in flower this year, Winton, Westmorland; Widdy bank, Durham; Conistone, Yorks; Glen Luce, Wigtown, DRUCE.

103/4. S. SAGINOIDES Karst. Loch na Lairige, M. Perth, DRUCE.

103/5. S. SCOTICA Druce. Loch na Lairige, M. Perth, DRUCE; Cuchullin, Skye, SLEDGE.

103/7. S. CILIATA Fr. Glynde, E. Sussex, Miss PICKARD.
Var. FILICAULIS (Jord.). Belfry wall, etc., Llandaff, Cardiff, Glamorgan, Miss VACHELL.

104/2. SPERGULA SATIVA Boenn. Charterhouse, Mendip, Somerset N., N. SANDWITH.

†108/1. CLAYTONIA SIBIRICA L. Walsall, Staffs, R. CURTIS; Newton Stewart, Wigtown, Miss YOUNG.

†108/2. C. PERFOLIATA Donn. Potterne Cemetery, N. Wilts, R. G. GWATKIN; Beaumaris, Anglesey, Miss ARMITSTEAD.

111/1. ELATINE HYDROPIPER L. Llyn Coron, Anglesey, an old locality, in very small quantity and poor condition. Seems to have gone from Ham Pond, Surrey, and from the pond near Sandhurst and near Mortimer, Berks, DRUCE.

112/13. HYPERICUM DESETANGSII Lam., var. IMPERFORATUM Bonnet. Askham Wood, N. Somerset, DRUCE. Dr Drabble so names this specimen.

112/14. H. PERFORATUM L., var. ANGUSTIFOLIUM Gaud. Near Charleston, Cornwall, TRESIDDER.

112/15. H. HUMIFUSUM L. An aberrant form, Holmbury, Surrey, CASTALIA, Countess of GRANVILLE.

116/1. LAVATERA ARBOREA L. Poole, Dorset, L. B. HALL.

117/1. MALVA MOSCHATA L., var. ALBA. Railway-side, Valley, Anglesey, GERALDINE, Countess of MAYO.

†117/7. M. NICAEENSIS All. Burton-on-Trent, Staffs; Didcot, Berks, Druce.

†119/3. WISSADULA TRILOBATA Rose, var. ACUMINATA Rose. (ABUTILON TRILOBATA Hams). Alien. Martin Mere, Southport, S. Lancs, A. G. LANGDON, ex F. W. HOLDER.

†122/1. HIBISCUS TRIONUM L. Splott, Cardiff, Glamorgan, R. L. SMITH.

124/1. RADIOLA RADIOLA (L.). Sands of Glen Luce, Wigtown; Mortimer, Berks, very fine, DRUCE.

*125/2. LINUM ANGLICUM Mill. Winton, Westmorland, Miss MASON, who kindly showed it to me.

†126/1. TRIBULUS TERRESTRIS L. Dover Harbour, Kent, 1848, J. D. HEATON.

*127/1. GERANIUM SANGUINEUM L., var. LANCASTRIENSE (Mill.). Inner Worms Head, Glamorgan, P. S. JEWELL, ex J. A. WEBB.

†127/5. G. PHAEUM L. Wiston, Surrey, CASTALIA, Countess of GRANVILLE; near Budge Woods, Beaumaris, Anglesey, Miss ARMITSTEAD.

127/7. G. PYRENAICUM Burm., f. With pale pinkish flowers, Cherry Hinton, Cambs, shown to me *in situ* by J. GILBERT-CARTER; Bailey Gate, Dorset, L. B. HALL.

127/12. G. PUSILLUM L. Burton-on-Trent, Staffs, DRUCE.

128/3. ERODIUM CICUTARIUM L'Hér., var. NEGLECTUM (B. f. & S.). Holyhead Mountain, Anglesey, DRUCE; Kenfig, Glamorgan!, Miss Vachell.
Var. TRIVIALE (Jord.). Burnham, N. Somerset, DRUCE.
Var. PIMPINELLIFOLIUM (Sibth.). Loddon Bridge, Berks; Girvan, Ayr, DRUCE.

†132/5. OXALIS CORYMBOSA DC. Dartmouth, S. Devon, F. M. DAY.

133/1. IMPATIENS NOLI-TANGERE L. Studley, Yorks, CASTALIA, Countess of GRANVILLE.

†133/3. I. PARVIFLORA DC. Michelmarsh, S. Hants, Miss SALMON.

†133/4. I. glandulifera Royle. Canal-side, Salter Hebble Bridge, Yorks, Druce and Foggitt; Whitney, Hereford; Norton, E. Gloster, J. L. Haines; Barrowden, Rutland, Sowter.

†140/2. Vitis hederacea L. On rubbish, Charleston, Cornwall, Tresidder.

142/2. Acer campestre L. Deeply lobed leaves, Normandy, Surrey, Druce.

149/1. Ulex europaeus L. With dark cream-coloured flowers, near Corfe Castle, Dorset, W. Van de Weyer.

149/2. U. Gallii Planch. Haleworth, E. Suffolk, J. Vaughan; Trelleck Bog, Monmouth, Amherst.

150/1. Cytisus scoparius (L.) Link. Pale yellow flowers at Norden Castle, Dorset, W. Van de Weyer.

151/3. Ononis spinosa L., var. procurrens Wallr. Charlbury, Oxon [D.037], Druce, det. Riencourt.

†152/9. Trigonella M. procumbens Reichb. Burton-on-Trent, Staffs, Druce.

†152/13. T. caelesyriaca Boiss. Avonmouth, W. Gloster, C. & N. Sandwith. A pretty plant.

†153/1. Medicago Falcata L. Shoreham beach, Sussex, A. E. Ellis; Long Melford, W. Suffolk, Druce.
Var. tenuifoliolata Vuyck. Hayle, Cornwall, A. L. Still.

†153/2. M. sylvestris Fries. Gulvat, Cornwall, Thurston; Kingston, near Southwick, Sussex, Miss A. Cottis.

†153/4. M. apiculata Willd. Ware, Herts [De.1073, 1080], Druce; Burton-on-Trent, Staffs [Dc.28/11], Druce.

†153/4. M. lappacea Desr. Ludvan, Cornwall [De.1094], C. W. Nichols; Burton-on-Trent, Staffs [De.1102], Druce.

†153/8. M. varia Martyn. Colchester, N. Essex, Druce.

†153/19. M. tuberculata Willd. Burton-on-Trent, Staffs [Dc.1123], Druce.

†153/29. M. ciliaris Krocker. Cardiff, Glamorgan, Druce.

†154/2. Melilotus alba Desr. East Shelton, Leicester, Sowter; Didcot, Berks, Druce.

†154/7. M. SULCATA Desr. Bristol, N. Somerset, C. & N. SANDWITH.

*155/3. TRIFOLIUM OCHROLEUCON Huds. St Saviours, Jersey, L. ARSENE, ? native; †Burton-on-Trent, Staffs, DRUCE.

155/8. T. MARITIMUM Huds. Newhaven, E. Sussex, E. PAYNE.

†155/15. T. HYBRIDUM L., var. ELEGANS (Savi). Grangemouth, Stirling, DRUCE.
Var. ELEGANS-CONSPICUUM. Burton-on-Trent, Staffs [Dc.1125], DRUCE.

155/16. T. REPENS L., var. RUBESCENS Ser. Beaconsfield, Bucks, Mrs WEDGWOOD.

†155/44. T. NIGRESCENS Viv. Burton-on-Trent, Staffs, DRUCE.

†160/1. LOTUS SILIQUOSUS L. Close to the road that leads down to the bathing huts, in cultivated ground, West Mersea, N. Essex, Miss CAMPBELL.

160/5. L. CORNICULATUS L., " f. GRANDIFLORA PRATICOLA ROBUSTUS." Wytham, Berks, DRUCE, det. RIENCOURT.

*160/8. L. ANGUSTISSIMUS L. South-west of Blackheath, Surrey, J. G. LAWN.

†166/6. ASTRAGALUS BOETICUS L. Avonmouth, N. Somerset, C. & N. SANDWITH.

†166/7. A. STELLA DC. Avonmouth, N. Somerset, C. & N. SANDWITH.

†170/1. CORONILLA VARIA L. Exeter, S. Devon, Col. WATTS in *Dev. Rep.*; Staverton, S. Devon, *Dev. Rep.*

†170/3. C. SCORPIOIDES Koch. Avonmouth, N. Somerset, C. & N. SANDWITH.

171/2. ORNITHOPUS PERPUSILLUS L. Baglan, Glamorgan, rare here, R. L. SMITH.

176/1. VICIA SYLVATICA L., var. CONDENSATA Druce. In quantity and uniform on the shingle on both sides of the Mull of Galloway, Wigtown, 1930, DRUCE.

†176/5. V. VILLOSA Roth agg. Birkdale, S. Lancs, HOLDER and WAGSTAFFE.

†176/6. V. DASYCARPA Ten. Potterne, N. Wilts, R. G. GWATKIN; Burton-on-Trent, Staffs, DRUCE.

176/7. V. BITHYNICA L. Poole, Dorset, L. B. HALL.

†176/17. V. Pseudo-cracca Bert. Burton-on-Trent, Staffs, Druce.

†176/21. V. calcarata Desf. Bristol, W. Gloster, C. & N. Sandwith; Burton, Staffs, Druce.

†176/26. V. pannonica Crantz. Southport, S. Lancs, Holder and Wagstaffe.

†176/27. V. melanops Sibth. & Sm. Poole, Dorset, L. B. Hall.

176/35. V. tetrasperma (L.) Moench, var. tenuissima Druce. By a pond-side near Inley, N. Hants; Hampstead Marshall, Berks, Druce.

†178/1. Lathyrus latifolius L. Garden escape, Hambleden, Bucks, Druce.

†178/3. L. tuberosus. Barry, Glamorgan, R. L. Smith and R. Melville.

†178/17. L. annuus L. Bristol, W. Gloster, C. & N. Sandwith.

†178/18. L. Cicera L. Bristol, W. Gloster, C. & N. Sandwith.

†178/21. L. Clymenum L. Bristol, W. Gloster, C. & N. Sandwith.

†178/22. L. Ochrus L. Burton-on-Trent, Staffs, Druce.

183/2. Prunus Padus L. Marlborough Scop, New Forest, S. Hants, L. B. Hall.

183/4. P. Cerasus L. Clattercutt, Oxford, Druce.

†183/8. P. cerasifera Ehrh. Near Bradfield, Berks (a recent introduction), Marsden, Jones and Turrill.

†184/5. Spiraea Douglasii Hook. Abersoch, N. Wales, Wagstaffe.

(All the Rubi have been kindly determined by Wm. Watson.)

185/1. Rubus idaeus L., var. asperrimus Lees. Frilford Hermitage, Berks, Druce.
Var. flavus Dr. Glen Roy, Westerness, J. A. Webb.

185/2. R. nessensis W. Hall. Brandon, Warwick; Bognor, Fittleworth, W. Sussex (as *plicatus*, 1914, W. M. Rogers); Retford, N. Lincs, Cumming; Badby Wood, Northants, Cumming and Riddelsdell; Bodmin, Cornwall; Brickhill, Bucks, Druce; Holmbury, Surrey, Castalia, Countess of Granville.

185/3. R. fissus Lindl. Salton, Warwick; Keswick, Cumberland; Teesdale, Durham; Ullapool, W. Ross; Clova, Angus; Phitulais, Easterness; Baddeslest, Llanberris, Carnarvon; Bladon, Oxon; Brickhill, Bucks, Druce; Binley Colliery, Brandon and Mathorp, Warwick; Retford, N. Lincs, Cumming; Hounds Street, N. Somerset, J. W. White; Test, Merioneth, Barton; Biddulph, Staffs, Painter; Norbury, Staffs, Bennett; Garve, W. Ross, 1909, Marshall; Mold Soughton, Flint, 1845, Hb. Druce.

185/4. R. Rogersii Lint. Bodmin, Cornwall; Boars Hill, Berks, Druce; Vales Wood, Rugton XI Towns, Salop, Linton, as *opacus*.

185/5. R. sulcatus Vest. Whitchurch, Glamorgan, 1909, Druce, as *plicatus*; Bognor Common, W. Sussex, Cumming.

185/6. R. plicatus W. & N. Brandon, Warwick; Fittleworth, W. Sussex; Forest of Dean, W. Gloster; Langworth, Lincs, Cumming; Sandhurst, Riseley, Berks; Dalmally, Argyll, 1898, Druce.

Var. Bertramii (G. Braun). Lodge Green, Hereford; Staunton Cover, N. Lincs; Micheldever, S. Hants, as *hemistemon*, Cumming; Maentwrog, Merioneth, 1922, Barton, as *plicatus*.

Var. pseudo-hemistemon Focke. Lyonshall Park, Hereford, as *nitidus*; Lyonshall Park, Hereford, 1905, as *plicatus*, var. *hemistemon*, A. Ley.

Var. amblyphyllus (Boul.) Sudre. Royal Common, Elstead, Surrey, Cumming.

185/7. R. nitidus W. & N. Elstead, Surrey; Lyndhurst, S. Hants; Bishop Wood, Hereford, Cumming; Whistley Wood, Northants, Druce.

Var. anglicanus Sudre. Pensford, Shapwick, N. Somerset. J. White, 1913, as *opacus* Focke; Great Langdale, Westmorland, A. Ley, 1905, as *opacus*; Muckross, Kerry; Hamworthy, Dorset, Druce.

185/8. R. opacus Focke. Bognor Common, W. Sussex, Cumming, as *nitidus*.

185/9. R. affinis W. & N. Brickhall, Retford, N. Lincs; Wareham Road, Corfe, Dorset; Vron, Radnor, Cumming; Tidenham Chase, W. Gloster, Riddelsdell; Alphamstone, N. Essex, G. C. Brown.

Var. Briggsianus Rogers. St David's, Pembroke; Tycroes, Anglesey, A. Ley.

185/10. R. subintegribasis Druce. comb. nov., British Pl. List, 30, 1928 = R. integribasis Rogers, not of P. J. Mueller. Alum Chine, Isle of Wight; Bournemouth, S. Hants; Royal Common, Elstead, Surrey; Walling Down, between Hordle and Fratton, Southbourne, S. Hants, Rogers; Royal Common, Elstead. Surrey, Cumming; Stoborough Common, Dorset, Druce.

Var. subopacus (Sudre) Dr. Bodmin, Cornwall, Druce; Royal Common, Elstead, Surrey, Cumming.

185/11. R. CARIENSIS R. & G. Bournemouth, S. Hants, 1890, R. V. MURRAY, as *dumnoniensis*; Tetford, Crediton, Devon, HIERN; Bodmin, Cornwall; Girvan, Ayr; Cuswell, Glamorgan; Fliquet Bay, Jersey, DRUCE.

185/12. R. HOLERYTHROS Focke. Witley, Elstead, Surrey; Goudhurst, Kent, CUMMING; Fleet, N. Hants, DRUCE.

185/13. R. LAETUS Watson. (R. LATIFOLIUS Rogers, non Bab.). Tyeroes Station, Anglesey, GRIFFITH, 1893, as *latifolius*; Bangor, Carnarvon, 1899, DRUCE (possibly *gratus*, teste Focke; Rogers thought the more likely suggestion was *latifolius*); near Llanuwchllyn, Merioneth, 1928, RIDDELSDELL, as *latifolius* Bab. "I am very glad to see the remark 'very much like *gratus*,' which fact struck me also, and led me to suggest that its proper place is next to *R. gratus*. *R. latifolius* Bab. is a Corylifolian."—W. WATSON. Lane near Callestick, W. Cornwall, 1925, RILSTONE, as *R. latifolius* Bab. [Ref. No. 385].

185/14. R. IMBRICATUS Hort.- Doward Bishops Wood Estate, Hereford, CUMMING; Corfe Castle, Dorset, ROGERS; Perranarworthal, Cornwall, DAVY, as *nemoralis*.

Var. DISCOLOR Sudre. Molland, N. Devon, DRUCE.

Var. LONDINENSIS Rogers. Perranarworthal, Cornwall, DAVY; Kea Downs, Cornwall, DRUCE.

185/16. R. CARPINIFOLIUS Weihe. Harleston, Northants, 1878, as *rhamnifolius* (See *Fl. Northants*, 61); Brickhill, Bucks; Highbridge, N. Somerset, DRUCE; Market Rasen, N. Lincs; Brandon, Warwick; Elstead, Surrey, CUMMING.

185/17. R. INCURVATUS Bab. Aymestrey, Hereford, CUMMING; Peppard (first record, 1886; see *Fl. Oxon*, 133); Tackley, 1919, Oxon; Glen Luce, Wigtown, 1898; Ullapool, W. Ross, 1893 (see Fl. 21); Toomebridge, Derry, 1898, DRUCE; near Valley, Holyhead, Anglesey, 1895, GRIFFITH, as *thyrsoideus*.

Var. SUBCARPINIFOLIUS R. & R. IV. Shire Stone, E. Gloster, RIDDELSDELL, as *incurvatus*; Mynydd-lach, Shirenewton, Monmouth, 1892, SHOOLBRED, as *Lindleianus*; Cwm Nees, Radnor, CUMMING; Harleston, Northants; Sandhurst, Berks, 1895, as *holerythros*, DRUCE; Shotover Hill, Oxon, 1925, DRUCE and RIDDELSDELL, as *holerythros*.

185/18. R. LINDLEIANUS E. Lees. Naphill, Bucks, 1897, DRUCE, det. as *calvatus* Blox. by FOCKE.

185/19. R. ARGENTEUS W. & N. Tamerton Foliott, Tor Cross, S. Devon, DRUCE, as *erythrinus*, teste ROGERS.

185/19b. R. LONGICUSPIDATUS Sudre. Woolard, N. Somerset, 1891, J. W. WHITE, as *argenteus*; Durdham Downs, W. Gloster, Miss I. M.

Roper; Heanton Punchardon, N. Devon, 1892, Painter, as *erythrinus*; Waters Meet, N. Devon, Druce.

185/20. R. cryptadenes Sudre. Tilehurst, Berks, as *erythrinus* Rogers (see *Fl. Berks*, 168); Coggs Wood, Oxon; Sunningdale, Berks, Druce; Perranzabuloe, W. Cornwall, Rilstone, as *argenteus*; South Tawton, N. Devon, Barton, as *argenteus*; Minstead, ? Hants, as var. *bipartitus*; Godalming, Surrey, 1921, as *imbricatus*, Marshall; Llanfechangel, Cardigan, as *argenteus*; Heanton Punchardon, N. Devon, 1892, as *erythrinus*, W. H. Painter; Fox's Wood, Brislington, N. Somerset, 1892; near the Avon, Hanham, W. Gloster, 1892; St Weonards, Hereford; Leigh Downs, N. Somerset; Washford, S. Somerset, J. W. White, all as *erythrinus*; Durdham, W. Gloster, J. W. White, as *argenteus*; Wentwood, Monmouth, 1890, A. Ley, as *erythrinus*; Bognor Common, W. Sussex; Lyndhurst, Branksome, S. Hants; Hill Morton Road, Brandon, Warwick, Cumming.

Var. bipartitus B. & R. Minstead, Hants; Godalming, Surrey, 1921, as *imbricatus*, Marshall; IV. Shire Stone, E. Gloster, Riddelsdell; Shapwick, N. Somerset, Murray, as *nemoralis*.

185/21. R. oplothyrsus Sudre. Tamerton Foliott, Woodbury Common, S. Devon; Hungerford, Berks, Druce; Hurstmonceax, Sussex; Littleworth Common; Burton Common, as *argenteus*, Cumming.

185/22. R. durescens W. R. L. Shirley, Derby, 1888, Linton, as *calvatus*, teste Focke.

185/24. R. oxyanchus Sudre. Branksome Park, Dorset, 1899, Rogers, as *nemoralis* P. J. M.

Var. silurum (Ley). Sellack, Hereford, A. Ley; Piddle Wood, Sturminster, Dorset, Cumming, as *nudicaulis*; Llandrindod, Radnor, Purchas, as *nitidus*.

Var. viridicatus Sudre. Boars Hill, Berks, 1899; Llanberris, Carnarvon, Druce.

185/25. R. cardiophyllus L. & M. Torquay, S. Devon; Coggs Wood (as *Scheutzii*); Tackley, Tadmarton, Oxon; Brickhill, 1900 (as *rhamnifolius*); Iver, Bucks; Bearwood, 1897; Newbury, 1895; Cothill, 1895 (as *rhamnifolius*, det. W. M. R.); Greenham, 1894, Berks, Druce; Clifton Down, W. Gloster, 1907, White, as *rhamnifolius*; Witley, Surrey; Epping Forest, Essex, Cumming; Tunbridge Wells Common, W. Kent, 1898, Rogers, as *rhamnifolius*; Halland Moss, S. Derby, 1889, Linton, as *polyanthemos*; Hart Hill, Cheshire [620], Riddelsdell, as *Bakeri*; Middlewick, Colchester, N. Essex [2077], G. C. Brown, as *imbricatus* Hort, cf. by Riddelsdell; near Bodorgan, Anglesey, 1889, as *rhamnifolius dumosus*; near Bodorgan Station, Anglesey, 1893, Griffith, as *rhamnifolius*, var.

×Lindleianus. Limpsfield, Sussex, Fox, as *Colemanni*.

185/26. R. SCHEUTZII Lindeb. Doddington, S. Lincs, CUMMING and LEY.

185/27. R. BAKERI F. A. Lees. Ham Common, Surrey, 1894 [502], WOLLEY-DOD, as *rhamnifolius*; Holt Edlard, Derby, as *rhamnifolius*; Brailsford, S. Derby, 1888 (as near *leucandrus*, det. FOCKE, and *polyanthemos*, det. RIDDELSDELL), LINTON; Corfe, Dorset, L. CUMMING; Sheen, JACKSON.

185/28. R. DUMNONIENSIS Bab. Coggs Wood, Oxon; Stranraer, Wigtown, 1898, DRUCE, det. *argentatus* by FOCKE and ROGERS.

185/29. R. POLYANTHEMOS Lindb. Carrick, Galway, DRUCE; Twycross, Leicester, BLOXAM, as *carpinifolius*; Shopham, Little Totham, N. Essex, CUMMING.

185/30. R. MAASII Focke. Great Langdale, Westmorland, LEY, as *opacus*; Lower Hill, Morton Road, Warwick, CUMMING, as *rhamnifolius*.

Var. GLABRATUS (Bab.). ? Llanberris, Carnarvon; Aber, Anglesey, as *ammobius* Focke, named by himself, DRUCE; Bangor, Carnarvon, GRIFFITH; Portmadoc, Merioneth and Carnarvon [1003], BARTON and RIDDELSDELL, as *cariensis*, var. *integribasis* Rog.; Crieff, M. Perth, 1894 [4219], BAILEY, as *pulcherrimus*; near Builth, Brecon, 1898, A. LEY, det. as near *durescens* by ROGERS.

185/30(2). R. MUENTERI Marss. Stalmine, Lancs, 1899, WHELDON, as *villicaulis*; wood by Binley Colliery, Brandon, Warwick, CUMMING; Watson has seen it from Dorset and Hants.

185/31. R. LINDEBERGII P. J. M. Durdham Downs, W. Gloster, J. W. WHITE; Saintfield, Co. Down, 1903, C. H. WADDELL, as *argentatus*, var. *robustus* (P. J. M.), fide Rogers; Bodorgan, Anglesey, GRIFFITH; Dunchurch, Warwick, CUMMING; Mangotsfield, Gloster, Miss ROPER, as *mercicus*; Sandhurst, Bearwood, Berks, DRUCE.

185/33. R. MERICUS Bagn. Biddulph, Staffs, PAINTER; Rudyard, Staffs, CUMMING, as *Maasii*.

Var. CHRYSOXYLON (Rogers). Bryn Llwyd, Carnarvon, GRIFFITH, as *pulcherrimus*.

Var. BRACTEATUS Bagn. Windsor, Bearwood, Berks; Loch Ryan, Wigtown, 1898, DRUCE; Anstey, Warwick, 1887, BAGNALL, as *Maasii*; Market Rasen, N. Lincs, 1907, CUMMING.

185/34. R. CHLOROTHYRSOS Focke. St Briavels, Hereford, LEY; Greenham, Berks, DRUCE.

185/35. R. VILLICAULIS Koehl., vera. Hungerford, Bearwood, Berks, 1894; Hell Copse, Bucks; Woodcote, Oxon, DRUCE; Royal Common, Elstead, Surrey, CUMMING, as *Colemanni*; Howle Green, Hereford, 1891, A.

LEY; Firley Heath, CUMMING, as *infestus*; an interesting variety from Elstead, Surrey, CUMMING.

Var. INSULARIS (Aresch.) Lange. Howle Green, Hereford, 1891, A. LEY, as *devoniensis*; Shirley, Derby, LINTON; Lungworth Wood, Lincs, 1907, CUMMING, as *Lindebergii*; Bangor, Carnarvon, 1899; Sandhurst, Berks; Gerrard's Cross, Bucks, 1900; Broxbourne, Herts; Golspie, E. Sutherland, 1907 (det. as typical *villicaulis* by ROGERS), DRUCE.

185/37. R. SELMERI Lindeb. Hayes Common, Kent, 1888, EYRE DE CRESPIGNY, as *R. rhamnifolius*, a var. intermediate with *Maasii*; Ashopton, N.E. Derby, 1893, LINTON, as *villicaulis*; near Cuerham, Bangor, Carnarvon, 1891, GRIFFITH, as *erythrinus*, fide Focke; Nash, Bucks, 1912, DRUCE, as *rhamnifolius*, det. ROGERS.

185/39. R. SAMPAIANUS Sudre. Halland Moor, Derby, LINTON; May Hill, Gloster, CUMMING, as *polyanthemos*; possibly this, Malwood, S. Hants, CUMMING.

185/40. R. RHOMBIFOLIUS Weihe. Forres, Elgin, DRUCE.

185/41. R. GRATUS Focke. Heath, Bucks, 1898, DRUCE, as *latifolius*.

185/41(2). R. SCIAPHILUS Lange. Bearwood, Berks, Druce.

185/43. R. RAMOSUS Briggs. Yate Common, W. Gloster, 1894, J. W. WHITE, as *dumnoniensis* Bab.; Branksome Park, Dorset, 1893, ROGERS, as *dumnoniensis*; Bethesda, Carnarvon; Shotover, Oxon, DRUCE.

185/44. R. THYRSOIDEUS Wimm. Hook Norton, 1918, RIDDELSDELL; Kilsby, Northants, CUMMING.

185/45. R. WINTERI Focke. Badby Woods, Northants, 1921, RIDDELSDELL, as *robustus* P. J. M.; Badby Wood, Northants, 1913 and 1914, CUMMING, as *robustus* P. J. M., forma; between Yeaveley and Stydd, Derby, 1889, LINTON, as *macroacanthus* Blox., det. as *argentatus*, var. *robustus*, by W. M. R.; Tubney Wood, Berks, 1892; North Leigh, Shotover, Oxon (as *argentatus*), DRUCE.

Var. CLIVICOLA (Ley). Godalming, Surrey, CUMMING.

185/45(2). R. PROPINQUUS P. J. M. Tudworth Quarry, Ross, Sellack, Hereford, 1907, CUMMING, as *argenteus* and *argentatus* Moyle Rogers; Lizard Downs, Cornwall; Dartmoor, S. Devon, ROGERS, as *argenteus*.

185/45(3). R. PSEUDO-BIFRONS Sudre. Firth Hill, Godalming, Surrey, CUMMING; Wimbledon Common, Surrey, 1921, BARTON, as *Godronii*.

185/46(2). R. CUSPIDIFER M. & L. Ruglan XI. Towns, Salop, 1892, LINTON, as *erythrinus*; St Weonards, Hereford, A. LEY; Larkton Hills, Cheshire, 1907, WOLLEY-DOD, as *Godronii*, var. *foliolatus*; Mortimer, Berks, DRUCE, as *argenteus* W. M. R.

185/47. R. ULMIFOLIUS Schott. With white fruit, in a field near Coventry, Warwickshire, where there were many bushes, CHITTENDEN in *Proc. R.H.S.*, cxiii., 1930.

Var. CONTRACTIFOLIUS Sudre. Poleworth, Warwick, DRUCE.

× ?. Long Buckby, Northants, DRUCE.

× ? ADSCITUS. Tumbledown Hill, Glamorgan, RIDDELSDELL, as *robustus × rusticanus*.

185/49. R. HEREFORDENSIS Sudre. Howle Hill, Ross, Hereford, CUMMING.

185/52. R. LENTIGINOSUS Lees. Lyndhurst, S. Hants, CUMMING.

185/53. R. MACROPHYLLUS W. & N. Badby Wood, Northants, CUMMING; Sandhurst, Silchester, Ambarrow, etc., Berks; Hornstock, Northants, 1900, DRUCE.

185/55. R. DANICUS Focke. Brandon, Willenhall, Warwick, CUMMING.

185/56. R. SCHLECHTENDALII Weihe. Woodford, Badby, Northants, 1910, DRUCE.

Var. MACROPHYLLOIDES (Genev.). Elstead, Surrey, 1908, as *villicaulis*; Badby Wood, Northants, CUMMING; Nuneham, Shotover, Oxon, DRUCE; Colwyn Bay, Denbigh, PAINTER.

Var. ANGLICUS Sudre. Church Stretton, Salop, PAINTER; Coombe Wood, Coggs Wood, Oxon; Sutton Park, Warwick; Greenham, Berks, DRUCE.

185/57. R. QUESTIERII L. & M. Foxholes Wood, Bailey Gate, Dorset, 1915, CUMMING.

185/58. R. SALTERI Bab. Fittleworth, Sussex, CUMMING, as *lentiginosus*.

185/59. R. COLEMANNI Blox. Wood Walton, Hunts, DRUCE.

185/62. R. SUBINERMOIDES Druce. Howle Hill, Ross, Hereford; Coombe Common, Surrey; Ham Rough, Forest of Dean, W. Gloster, CUMMING, as *pubescens*.

185/63. R. ADSCITUS Genev. Boars Hill, Berks, DRUCE; Biddulph, Staffs, PAINTER.

185/64. R. MELANOCLADUS Sudre. Micheldean, W. Gloster, 1907, CUMMING, as *hirtifolius*.

185/66. R. PYRAMIDALIS Kalt. Bagley Wood, Berks, 1861, W. HOLLIDAY, as *carpinifolius*; Stanton, N. Lincs, CUMMING; Aymestrey, Hereford, LEY, as *Schlechtendalii*; Henwood, Berks, Nuneham, Oxon, DRUCE,

?×DISCERPTUS. Twelve O'clock Drive, Warwick, 1920, CUMMING, as *Sprengelii.*

185/73. R. EGREGIUS Focke, type. Boars Hill, Berks, 1925, DRUCE, det. as *R. mercicus*, var. *bracteatus*, by RIDDELSDELL. "The felted panicle, felted calyx, and 3-nate tomentose adult leaves distinguish it from *R. mercicus*, var. *bracteatus.*—You must have *R. egregius* Focke type at Boars Hill, and *R. egregius*, var. *effiminatus*, at Shotover. In *Fl. Berks.* you say that Rogers was at first inclined to regard it as a forma of *R. pulcherrimus.* Friderichsen puts *R. egregius* beside *R. pulcherrimus* in *Egregii.* Focke thought it recalled *R. mucronatus* rather. The broad 3-nate mucronate leaves certainly do recall that bramble."—W. WATSON.
Var. EFFIMINATUS Focke. Shotover, Oxon, DRUCE.

185/74. R. CRINIGER (Lint.) Rogers. West Bergholt, N. Essex [699], 1915, G. C. BROWN, as *Drejeri*, teste W. M. ROGERS.

185/79. R. CINEROSUS Rogers. Tilehurst, 1888, Aldworth, Berks, DRUCE.

185/81. R. MUCRONATOIDES Ley. Cwm Nees, Radnor, 1908, CUMMING.

185/82. R. AMPLIFICATUS (Lees). Coggs Wood, Oxon; Boars Hill, Berks, 1907, as *pallidus* var., DRUCE; Radyr, Glamorgan, RIDDELSDELL.

185/83. R. ALTERNIFLORUS M. & L. Banstead Heath, Surrey, 1923, BARTON and RIDDELSDELL, as *argenteus* W. & N.; Wimbledon Common, Surrey, 1921, RIDDELSDELL and BARTON, as *argenteus*, forma *glandulosa.*

185/84. R. APICULATUS W. & N. Pontyclun, Glamorgan, RIDDELSDELL, as ? *scaber.*

185/85. R. FURVICOLOR Focke. Foxholes Wood, Bailey Gate, Dorset, 1915, CUMMING, as *Sprengelii*; St Ouen's, Jersey, 1923, DRUCE.

185/86. R. VIRGULTORUM Ley. Brickhill, Bucks [24], DRUCE; Lincoln, 1907, A. LEY; Woodford to Preston Capes, Northants, 1918; Stockton, Warwick, 1902, CUMMING.

185/88. R. DENTATIFOLIUS (Briggs). Lustleigh, Devon, 1908, A. LEY.

185/89. R. DREJERI G. Jens., var. DUNENSIS (Rogers). Clonbur, Galway, 1922, DRUCE.
Var. LEYANUS (Rogers). Shipham on Mendip, N. Somerset, 1918, Miss I. M. ROPER; Barton Common, S. Hants, 1917; South Wood, Ross, Monmouth, 1915, CUMMING.

185/90. R. RADULA Weihe, type. Gorseley, Hereford, 1907, CUMMING and LEY, as *setulosus.*

Var. ECHINATOIDES (Rogers). Doddington. S. Lincs. 1907, CUMMING, as *infestus*, det. W. M. R.

185/92. R. ECHINATUS Lindley. Coombe Wood, Warwick, 1921; Lilbourne, Northants, 1918, CUMMING, as *Sprengelii*.

185/92(2). R. GENEVIERII Bor. Corfe, Dorset, CUMMING, as *Boraeanus*; Amersham, Bucks, DRUCE.

185/93. R. RUDIS W. & N. Aldworth, Berks, HARVEY, teste H. J. RIDDELSDELL.

185/98. R. GRIFFITHIANUS Rogers. May Hill, Gloster, 1908, as *Borreri*; Godalming, Surrey, 1908, det. as *ericetorum* by W. M. R.; Shillingstone, "Sussex, 1911," as *Borreri* (? if in Dorset), CUMMING.

185/108. R. BLOXAMII Lees. Wigginton, Oxon, RIDDELSDELL, as *fuscus*; Lady's Mile, near Rugby, Warwick, 1908, CUMMING.

185/108(2). R. THYRSIFLORUS Weihe. Doward Wood, Hereford, 1907, CUMMING, as *longithyrsiger*.

185/110. R. FUSCUS Weihe. Sturminster, Dorset, 1915; Queen's Wood, ? Warwick, 1907, CUMMING, as *regillus*.
Var. HYPOSERICEUS Sudre. Queen's Wood, ? Warwick, 1907; Church Lane, Okehampton, S. Devon, 1915; Badby, Northants, 1914, det. as *scaber* by W. M. R., CUMMING; Buckholt Wood, Cranham, E. Gloster, RIDDELSDELL.

185/112. R. PALLIDUS Weihe. Coombe Wood, Warwick, 1921, CUMMING, as *fuscus*.
Var. LEPTOPETALUS Rogers. Lyndhurst, S. Hants, 1908, CUMMING.

185/113. R. MONACHUS Jens. (GLAREOSUS Rogers). Milford, Surrey, MARSHALL, as *anglosaxonicus*; Coombe Wood, Warwick, 1908, as *pallidus*; Milford, S. Hants, 1908, as near *Koehleri*; Bognor, W. Sussex, 1914, CUMMING.

185/118. R. LONGITHYRSIGER Bab. Abbey Wood, Okehampton, S. Devon, 1926, CUMMING, as *scaber*; Ilfracombe, N. Devon, 1918, RIDDELSDELL, as *foliosus*.

185/123. R. HYSTRIX Weihe. Brandon, Warwick, DRUCE.

185/126. R. FOLIOSUS, var. SALTUUM Focke. Stanway, N. Essex [1094], G. C. BROWN, as *foliosus*, det. W. M. R. and H. J. R.; Queen's Wood, ? Warwick, 1907; Doward Wood, Hereford, 1907, CUMMING.

185/127. R. HOSTILIS P. J. M., nov. var. NUDIFOLIUS Sudre. as *Bellardi*. Twelve O'clock Drive, Warwick, CUMMING.

185/146. R. SPINULIFER M. & L. North Wood, Market Rasen, N. Lincs, 1908, CUMMING, as ? *botryeros*, det. W. M. R.

185/149. R. DUMETORUM W. & N., var. FEROX (Weihe). Bloxham, Oxon, 1922, RIDDELSDELL, as *Godronii*, var. *clivicola* Ley.

185/151. R. CORYLIFOLIUS Sm. Burford Downs, Oxon, DRUCE, det. as *argenteus* ? by ROGERS.

189/8. POTENTILLA PROCUMBENS Sibth. Port William, Wigtown, DRUCE.

†189/13. P. RECTA L. Hoar Cross, Stafford, Miss MEYNELL.

*190/1. ALCHEMILLA PUBESCENS Lam. Ingleborough, Yorks, DRUCE.

190/2. A. PRATENSIS Schmidt. St Boswells, Roxburgh; Middleton-in-Teesdale, Yorks and Durham; Cronkley, Yorks; Blackhead, Co. Clare, DRUCE; Cave Hill, Antrim, Mrs WEDGWOOD.

*190/3. A. CURTILOBA Buser. Langdon Beck, Durham, DRUCE.

190/4. A. MINOR Huds. Melmerby, Cumberland; Redbournbury, Herts, DRUCE.

190/5. A. PASTORALIS Buser. Middleton-in-Teesdale, Durham and N.W. Yorks; Cave Hill, Antrim, DRUCE.

190/6. A. SUBCRENATA Buser. Cave Hill, Antrim, " mais peu normale," F. Jaquet.—N. CARROTHERS, ex Mrs WEDGWOOD.

190/8. A. ALPESTRIS Schmidt. Loch Lubnaig, Lochearnhead, M. Perth; Cluny, E. Perth; Wharfedale, Yorks, DRUCE; Bolton, Yorks, CASTALIA, Countess of GRANVILLE.

*190/8(2). A. CONTROVERSA Buser. Loch Lubnaig, M. Perth, August 1930, DRUCE.

*190/11. A. RENIFORMIS Buser. Wharfedale, Yorks, DRUCE. New to England.

191/1. AGRIMONIA EUPATORIA L. Fermain Bay, Guernsey, a very rare plant in the island, Mrs HICHENS.

191/2. A. ODORATA (Gouan) Mill. Faccombe and Coombe, N. Hants, DRUCE.

194/2. ROSA ARVENSIS Huds., var. LAEVIPES Gren. Hinksey, Berks, DRUCE.

194/5. R. STYLOSA Desv., var. DESVAUXIANA Ser. Near Headley, Surrey, FRASER.

194/6. R. CANINA L., var SPURIA W.-Dod (INSIGNIS). Boars Hill, Berks; Godstow, Oxon, DRUCE.

194/7. R. SQUARROSA Rau. Market Harborough, Leicester, August 1930, DRUCE.
Var. CLADOLEIA (Rip.), comb. nov. = LEIOSTYLA. Greenham Common, Berks, DRUCE.
Var. SPHAEROIDEA (Rip.), comb. nov. Charlbury, Oxon, DRUCE.
Var. MEDIOXOMA (Déség.), comb. nov. Poole Bottom, Oxon, DRUCE.
Var. SYLVULARUM Rip., comb. nov. Frilford, Berks, DRUCE.

194/8. R. ANDEGAVENSIS (Bast.), var. WOLLEY-DODII (Sudre). Stokes Heath, WOLLEY-DOD; Telegraph Inn, Surrey, FRASER.

194/9. R. BLONDAEANA (Rip.), var. LATEBROSA (Déség.) Kingston Vale, Cooper's Hill, Runnymede, Surrey, FRASER.

194/10. R. DUMETORUM Thuill. Market Harborough, Leicester, 1930, DRUCE.
Var. ERECTA W.-Dod. Shepperton, Middlesex, GROVES, as *implexa* ?; Wytham, Berks, DRUCE.
Var. GABRIELIS (F. Ger.). Ford Brook, E. Sussex, BAILEY.
Var. SEMIGLABRA (Rip.). Market Harborough, Leicester, DRUCE.
Var. RAMEALIS (Pug.). Port William, Wigtown, DRUCE.

194/12. R. GLAUCA Vill., var. COMPLICATA (Gren.). Clunie, E. Perth, DRUCE.
Var. SUBCOMPLICATA Hayek. Winton, Westmorland, DRUCE.

194/14. R. MICRANTHA Sm. Hampstead Marshall, Berks, 1896, DRUCE.

194/20. R. SHERARDI Davies. Clunie, E. Perth, DRUCE; Clawton, Devon, HARVEY.
Var. RESINOSOIDES (Crep.) Dr. Clunie, E. Perth, DRUCE.

194/21. R. MOLLIS Sm., var. GLANDULOSA (W.-Dod). Clunie, E. Perth, DRUCE.

194/23. R. SPINOSISSIMA L. Inland in a hedge at Broughton, S. Hants, a taller bush with whiter flowers than the dunal plant, Miss SALMON.

†194/25. R. VIRGINIANA Mill. Pont Erwyd, Dr SALTER; near Ripley, Yorks, Hon. Lady INGILBY.

†194/26. R. RUGOSA Thunb. Rock, Cornwall, quite naturalised, Rev. W. W. MASON.

195/2. PYRUS COMMUNIS L. * ? var. DESEGLISEI (R. & C.). Near Ross on Wye, Hereford, Rev. E. M. REYNOLDS.

195/5. P. AUCUPARIA (L.) Ehrh. Garlieston, Wigtown, DRUCE.

†195/9. P. INTERMEDIA Ehrh. Several large trees near Dunan, Kinloch Rannoch, M. Perth, DRUCE.

195/14. P. LATIFOLIA (Pers.). Ashwater, N. Devon, Rev. H. H. HARVEY. "Is this not the variety?"—DRUCE.

†200/1. TELLIMA GRANDIFLORA Br. Garden escape near Guildford, Surrey, since 1922, F. CLARKE.

203/2. CHRYSOSPLENIUM OPPOSITIFOLIUM L. Near North Court, Eastry, Kent, H. E. H. RICE.

†207/2. RIBES NIGRUM L. River-side, Burton-on-Trent, Staffs, DRUCE.

211/1. SEDUM PURPUREUM Link. Clunie, E. Perth; Bay of Luce, Wigtown, DRUCE; Birchanger, N. Essex, Mrs SHELDRAKE, ex G. C. BROWN.

*211/6. S. ACRE L. The continental form, on a wall near Lune Head, N.W. Yorks, DRUCE.

213/3. DROSERA ROTUNDIFOLIA L. Tiptree Heath, N. Essex, Miss CLYTIE BROWN. Not seen there since 1881.

217/2. CALLITRICHE OBTUSANGULA Le Gall. Bibury, E. Gloster, DRUCE.

*217/4. C. POLYMORPHA Lönn. Near Lisdoonvarna, Co. Clare, 1929, DRUCE. New to Ireland. Also sent by P. B. O'Kelly in 1930.

220/5. EPILOBIUM TETRAGONUM L. Drayton, Middlesex, DRUCE.

220/7. E. OBSCURUM Schreb. Freshfield, S. Lancs, HOLDER and WAGSTAFFE.

220/8. E. ROSEUM Schreb. Grangemouth, Stirling, DRUCE; Wold Fell, West Riding, Yorks, 1835 ft., J. FRANKLAND.

220/14. E. PALUSTRE L., var. PUBESCENS Coss. & Germ. Littlesea, Dorset, DRUCE.

†220/15. E. NUMMULARIFOLIUM R. Cunn. Misedale reservoir, Garstang, Lancs, H. G. BUNKER; Coniston, L. Lancs, E. W. MAGOR; by the river Esk below Arncliffe Wood, N.E. Yorks, S. P. ROWLANDS in *N.W. Nat.*, 251, 1930.

†223/1. OENOTHERA BIENNIS L. Lympne, Kent, Miss E. BIRCHALL.

†223/5. O. AMMOPHILA Focke. West Wittering, W. Sussex, J. GILMOUR.

225/2. CIRCAEA CANADENSIS Hill. High Force, Durham, DRUCE.

225/3. C. ALPINA L. Tyndrum, M. Perth, DRUCE.

†239/1. ERYNGIUM CAMPESTRE L. † Barry dock, Glamorgan, DRUCE; Maresfield, Sussex, CURTIS.

†245/6. BUPLEURUM LANCIFOLIUM Hornem. Tiverton, N. Devon, Col. WATTS in *Dev. Rep.*

247/5. APIUM INUNDATUM (L.) H. G. Reichb. Rhosgoel, Radnor, J. L. HAINES.

†249/1. AMMI MAJUS L. Birkdale, S. Lancs, HOLDER and WAGSTAFFE; Knighton, Leicester, SOWTER; Burton-on-Trent, Staffs, DRUCE.

†252/1. PRIONITIS FALCARIA (L.) Dum. Barry, Glamorgan, R. L. SMITH and REYNOLDS.

255/2. PIMPINELLA SAXIFRAGA L., var. POTERIIFOLIA Koch. Walmer, E. Kent, CASTALIA, Countess of GRANVILLE.
Var. DISSECTA With. Walmer, E. Kent, CASTALIA, Countess of GRANVILLE; Little Rollright, Oxon, Miss A. WILKINSON.
Var. OVATA Sprengel. Holyhead, Anglesey, DRUCE.

261/1. CHAEREFOLIUM SYLVESTRE (L.) S. & T., var. ANGUSTISECTA Druce. Anglesey; Tiverton, N. Devon; Port Logan, Wigtown; Creeside, Kirkcudbright; Girvan, Ayr; Carstairs, Lanark; near Corstorphine, Midlothian; Linlithgow town; Grangemouth, Falkirk, Stirling, DRUCE.

261/2. C. ANTHRISCUS (L.) S. & T. Parkstone, Dorset, L. B. HALL.

†263(2). FERULA species. Barry, Glamorgan, 1930, R. L. SMITH, MELVILLE and REYNOLDS. The leaves only appearing, undeterminable.

274/1. ANGELICA SYLVESTRIS L., var. DECURRENS Lallem. Bolton, Yorks, CASTALIA, Countess of GRANVILLE; Loch na Lairige, M. Perth, 2700 ft.; Port Logan, Wigtown; Girvan, Ayr; Jedburgh, Roxburgh; Galashiels, Selkirk; Peebles; Linlithgow; Falkirk, Stirling; Winch Bridge, Durham and Yorks; Glen Cahir, Co. Clare, DRUCE.

†276/4. PEUCEDANUM GRAVEOLENS L. Burton-on-Trent, Staffs, DRUCE.

277/2. HERACLEUM SPHONDYLIUM L. Ten feet six inches high, inflorescence three feet six inches across, by Lough Tue, Cork, *Irish Nat.*, 135, 1930. This suggests *Mantegazzianum*, DRUCE.

†279/1. Coriandrum sativum L. Bath, N. Somerset, C. & N. Sandwith.

†281/2. Anidrum testiculatum (L.) O.K. Winchmore Hill, Middlesex, L. B. Hall.

284/1. Hedera Helix L., var. borealis Druce. Hopton Wafers, Salop, Miss Todd.

287/3. Sambucus Ebulus L. Ballyvaghan, Co. Clare, Druce.

296/4. Galium hercynicum Weig., var. transiens (Rouy) Dr. Trearddur, Anglesey, Druce.

296/5. G. pumilum Murray. Conistone, Outershaw, Yorks, Druce.

296/7. G. Witheringii Sm. Trearddur Bay, Anglesey, Druce.

*†296/15. G. Valantia Weber. Burton-on-Trent, Staffs, Druce.

†298/4. Asperula Galioides M. Bieb. Shinfield skinworks dumping ground, Yorks, Lees.

†298/5. A. arvensis L. Bristol, W. Gloster, C. & N. Sandwith.

†301/5. Valeriana Phu L. Alien, E. Europe. In some plenty south of Tiverton, N. Devon, Col. Watts.

304/3. Valerianella dentata (L.) Poll. Potterne, N. Wilts, Gwatkin; Cinderhill, Notts, R. Bulley.
Var. mixta (L.). Warepit, Dorset, L. B. Hall.

308/1. Scabiosa Columbaria L. Surrey Down. Flowers heliotrope-coloured, bred true, Fraser.

312/1. Solidago Virgaurea L., var. interrupta Druce. Tees-side, Winch Bridge, N.W. Yorks, Druce; Holmbury, Surrey, Castalia, Countess of Granville.

†312/3. S. lanceolata L. Chadstock, S. Devon, Brig.-Gen. Firth in *Dev. Rep.*

†213/5. S. serotina Ait. Brightlingsea, N. Essex, G. C. Brown.

†312/6. S. canadensis L. Callander, M. Perth, Druce.

314/1. Bellis perennis L. Hen and Chicken variety, Foxcote, E. Gloster, Miss Abell.

†317/1. Callistemma hortense Cass. Mortimer Common, Berks, with other aliens, Druce.

†318/4. ASTER NOVI-BELGII L. Garlieston, Wigtown, DRUCE; Headington, Oxon, Miss PAYNE.

318/19. A. TRIPOLIUM L., var. GLABER Bolz. The marshes, Shellness, E. Kent, CASTALIA, Countess of GRANVILLE; Grangemouth, Stirling, DRUCE.

†320/8. ERIGERON SPECIOSUS (Lindl.) DC. Maplethorpe, Lincs, LEES MS.

326/1. ANTENNARIA DIOICA (L.) Gaertn., var. HYPERBOREA (D. Don) DC. In a rocky shelf at the base of Ben Slioch, W. Ross, Prof. FERNALD in *Journ. Bot.*, 8, 1931. It is known from Skye.

†333/1. INULA HELENIUM L. Amre, W. Gloster, J. L. HAINES.

†335/1. BUPTHALMUM SPECIOSUM (Schreb.) Dr. Glen Isla, Angus, CORSTOPHINE.

†341/1. XANTHIUM STRUMARIUM L. Bristol, W. Gloster, C. & N. SANDWITH; Cardiff and Barry, Glamorgan, Miss VACHELL and R. L. SMITH.

†341/2. X. SPINOSUM L. Bristol, W. Gloster, C. & N. SANDWITH.

†341(2)/1. SIEGESBECKIA ORIENTALIS L. Frizinghall, Yorks, 1910, F. RHODES, ex LEES.

†346/1. LEPACHYS COLUMNARIS Torrey & Gray. Bristol, W. Gloster, C. & N. SANDWITH.

†353/4. BIDENS PILOSA L. Bristol, W. Gloster, C. & N. SANDWITH.

†354/1. GALINSOGA PARVIFLORA Cav. Fetcham, Surrey, BURKILL.

†356/1. HEMIZONIA PUNGENS Torrey & Gray. Burton-on-Trent, Staffs, DRUCE and CURTIS.

†364/4. ANACYCLUS DISSIMILIS Pomel. Burton-on-Trent, Staffs, DRUCE.

365/1. ACHILLEA MILLEFOLIUM L., var. LANATA Koch. Near Lumsden, N. Aberdeen, with the rose-coloured flowers (var. *rosea*), W. WILSON.

Var. CONSPICUA Druce. Near Stamford, S. Lincs; near Grantham, N. Lincs; Newark, Notts; near Thirsk, Yorks [61]; Middleton-in-Teesdale, Durham; Alston, Cumberland; Winton, Westmorland; Falkirk, Stirling; Tyndrum, M. Perth; Blairgowrie, E. Perth, DRUCE.

†368/8. ANTHEMIS RUTHENICA M. Bieb. Near Bristol, W. Gloster, C. & N. SANDWITH.

†370/13. Chrysanthemum Parthenium (L.) Bernh. Grangemouth, Stirling, Druce.

†370/17. C. coronarium L. Burton-on-Trent, Staffs, Druce.

†371/3. Matricaria suaveolens (Pursh) Buch. Sandhills, Kirkinner, Wigtown; Clunie, E. Perth; Grangemouth, Stirling, Druce.

†378/8. Artemisia Abrotanum L. Hedge-bank, Mull of Galloway, Wigtown, Druce.

†378/16. A. biennis Willd. Glynde, E. Sussex, Miss Pickard.

383/6. Senecio erucifolius L. A form with narrowly cut leaflets, and very numerous flowers, Wallington, Surrey, A. L. Still.

383/8. S. viscosus L. Salter Hebble, Yorks; Grangemouth, Stirling, Druce; Pennon, the Castle, etc., Anglesey, Miss Armitstead; Loughborough, Leicester, Bemrose (det. Schinz).

383/10. S. vulgaris L., var. lanuginosus (Trow). Bournemouth. S. Hants; Highbride, N. Somerset, L. B. Hall.

383/32. S. integrifolius (L.) Clairv., var. vulgaris DC. Winton, Westmorland, Miss Mason, who kindly showed me the station for this very rare form on the Northern slope of a rather steep hilly pasture. It may be distinct from the plant of De Candolle.

383/33. S. spathulifolius DC., var. maritimus Syme, which is probably a distinct form from the Continental plant. It was in splendid flower on the Anglesey coast in June.

393/2. Arctium nemorosum Lej. Sandhills, Wigtown; Creetown, Kirkcudbright, Druce.

†395/1. Carduus nutans L., var. macrocephalus (Desf.). Bristol, W. Gloster, C. & N. Sandwith.

†395/3. C. pycnocephalus L. Burton-on-Trent, Staffs. Druce.

396/4. Cirsium acaule (L.) Weber, var. caulescens (Pers.). Walmer, E. Kent, Castalia, Countess of Granville; Avebury, Wilts; Coombe, N. Hants, Druce.

†396/8. C. incanum (Ledeb.). Newhaven, Sussex, Druce.

†397/1. Onopordon Acanthium L. Breakback Ridge, Bromsgrove. Worcs, Miss Wilkinson.

†397/2. O. tauricum Willd. Burton-on-Trent, Staffs, 1929, Druce.

405/2. CENTAUREA JUNGENS Gugl. Southwick, Sussex, E. PAYNE.

405/3. C. ANGUSTIFOLIA Gugl. Avebury, Wilts, DRUCE.

405/8. C. OBSCURA Jord. Widdy bank, Durham; Winton, Westmorland; Alston, Cumberland; Glen Luce, Wigtown, DRUCE.

405/11. C. NEMORALIS Jord. Avebury, Wilts; Stamford, S. Lincs; Teesdale, Durham; Winton, Westmorland, DRUCE.

†405/25. C. DIFFUSA Lam. Bristol, W. Gloster, C. & N. SANDWITH.

†405/28. C. MACULOSA Lam. Bristol, W. Gloster, C. & N. SANDWITH.

†405/31. C. SOLSTITIALIS L. Little Mongeham, E. Kent, CASTALIA, Countess of GRANVILLE.

†405/32. C. MELITENSIS L. Burton-on-Trent, Staffs, DRUCE.

†405/33. C. NICAEENSIS All. Burton-on-Trent, Staffs, DRUCE.

405/35. C. CALCITRAPA L. Lockerly, S. Hants, Miss SALMON.

†405/37. C. SALMANTICA L. Southwick, Sussex, E. PAYNE.

†405/40. C. IBERICA Trev. Bristol, W. Gloster, C. & N. SANDWITH.

†407/1. CARTHAMUS LANATUS L. Colchester, N. Essex, 1928 [2429], G. C. BROWN, as *C. dentatus* Vahl; Avonmouth, N. Somerset; Bristol, W. Gloster, C. & N. SANDWITH.

†407/3. C. TINCTORIUS L. Charleston, Cornwall, TRESIDDER; Brighton Downs, E. Sussex, Lady ALETHEA BUXTON; Langley, Bucks, DRUCE.

409/1. CICHORIUM INTYBUS L., var. GLABRATUM (Presl). Newhaven, E. Sussex, DRUCE.

†416/4. CREPIS NICAEENSIS Balb. Colchester, N. Essex, DRUCE.

416/5. C. CAPILLARIS (L.) Wallr., var. ANGLICA Dr. & Thell. Sandhills, Wigtown; Ayr; Grangemouth, Stirling; near Carstairs, Lanark; Jedburgh, Roxburgh; Dumfries; Winton, Westmorland; Melmerby, Cumberland; Skipwith, Yorks. The common British plant. It is probably a distinct species from *capillaris*: indeed, Dr Murr has named it *C. Druceana*.

416/10. C. TARAXACIFOLIA Thuill. Near Llanddona, Anglesey, Miss ARMITSTEAD.

†419/9. HIERACIUM CLAROPURPUERUM N. P. Tiverton, N. Devon, Col. WATTS.

*419/38. H. NIGRESCENS Willd. Leverborough, S. Harris; Ulladale, N. Harris, DRUCE.

419/45. H. CUMBRIENSE Hanbury. Above Winton, Westmorland, DRUCE.

419/50. H. SCHMIDTII Tausch. Teesdale, Durham, 1889, J. WHELDON; Craig y Maes, Montgomery, SALTER.

419/56. H. LEYI Hanbury. Blain Ingherin, My hirin Gard, Plinlimmon, 1500 ft., SALTER.

419/69. H. ARGENTEUM Fr. Craig y Morei, Plinlimmon, 1750 ft., SALTER.
*Var. SEPTENTRIONALE Hanbury. Ulladale, N. Harris, DRUCE.

*419/83. H. PELLUCIDUM Laest. (MELANOLEPIS Almq.). Winch Bridge, Durham, DRUCE.

†419/86. H. POLLINARIUM Hanbury. Steeple Aston, Oxon, DRUCE. Perhaps brought in with plants for the garden.

*419/89. H. SUBLEPISTOIDES Zahn. Newhaven, E. Sussex, 1929, teste Zahn; Stroud, E. Gloster, DRUCE.

419/92. H. CRASSICEPS Dahlst. Glen Fiagh, Glen Dole, Angus, 1882, DRUCE, teste ZAHN.

*419/93. H. MORULUM Dahlst. Cheddar, N. Somerset, DRUCE, teste ZAHN.

419/95. H. GRANDIDENS Dahlst. (Le Han, Belgium, 1920, DRUCE). Carig y Mais, Montgomery, 1926, SALTER, teste DAHLSTEDT; Winton, Westmorland, DRUCE.

*419/108. H. KILLINENSE Zahn. (H. MICRACLADIUM F. N. Will.). Whitewell, Belfast, 1865, Hb. DRUCE, teste ZAHN. New to Ireland.

419/119. H. EXPALLIDIFORME Dahlst. Linn of Dee. S. Aberdeen, 1878; Ben Lawers, Ben Laiogh, M. Perth, 1898, DRUCE, teste ZAHN.

419/121. H. RIVALE Hanbury, var. DASYTHRIX (W. R. L.). Loch na Lairige, M. Perth, DRUCE.

419/122. H. DIAPHANOIDES Lindeb. Glasbury, Radnor, DRUCE.

*419/123. H. MEGAPODIUM Dahlst. Craig y Furton, Tregannon, SALTER.

*419/140. H. PRAESIGNE Zahn. (PRAESTANS Lint., non D.). Burton-on-Trent, Staffs, DRUCE.

419/239. H. STRICTUM Fr. Cader Idris, Merioneth, SALTER.

419/241. H. UMBELLATUM L. Bethesda, Carnarvon, DRUCE.
Var. CORONOPIFOLIUM Bernh. Isle of Wight, STRATTON; Knighton, Leicester; Melmerby, Cumberland, MASON; Teesdale, Durham, DRUCE.

423/10(2). TARAXACUM RUBICUNDUM Dahlst. Walney Isle, Mrs WEDGWOOD.

423/17. T. BRITANNICUM Dahlst. For "Steeple," read "North Aston." Add "one of the most characteristic British species." *Rep. B.E.C.*, 1929.

*423/28. T. NAEVOSUM Dahlst. Near Loch Ryan, Wigtown; Thirsk, S.E. Yorks; Grangemouth, Stirling, DRUCE.

423/37. T. ALATUM Lindb., f. For "Northants," read "North Hants," in *Rep. B.E.C.*, 1929.

425/1. LACTUCA VIROSA L. Parkstone, Dorset, L. B. HALL.

425/2. L. SERRIOLA L. East Shelton, Leicester, SOWTER.

425/4. L. MURALIS Fres. Cadnant, Anglesey, Miss ARMITSTEAD.

†428/1. TRAGOPOGON PORRIFOLIUS L. In a field at the Downs School, Colwall, Hereford, F. M. DAY.

†434/1. PHYTEUMA SPICATUM L., var. CAERULEUM Rouy. Banks of the Teviot, Jedburgh, Roxburgh, Lady MARGARET KERR, sent by Mr JUSTICE TALBOT. Perhaps brought down by the river from a garden.

435/1. CAMPANULA GLOMERATA L. With deeper lobes, Ewelme, Oxon, Lady SEVERN.

435/3. C. TRACHELIUM L. Holmbury, Surrey, CASTALIA, Countess of GRANVILLE. This is the rare type plant with glabrous calyces.

435/4. C. RAPUNCULOIDES L. Hampstead Marshall, Berks, Hon. Mrs G. BARING.

438/2. VACCINIUM MYRTILLUS L. Linwood Warren, N. Lincoln, a rare species in the county, Miss J. GIBBONS.

446/1. ERICA CINEREA L., var. SPLENDENS (Vig.) Dr. Tadley, Berks, and N. Hants, DRUCE.
Var. RENDLEI L. B. Hall. Near Moreton, Dorset, L. B. HALL.

446/7. E. VAGANS L. This is reported in *Trans. Devon Bot. Rep.* for 1930. Can its history be obtained?

†450/1. KALMIA ANGUSTIFOLIA L. Ranworth End, Rufford Forest, Notts, SOWTER.

†451/2. LEDUM GROENLANDICUM Oeder. (L. LATIFOLIUM Ait.). Found near Henley Park, Normandy, Surrey, by C. E. MARKS. Through his kindness I was enabled to see the specimens growing. The habitat was on the very wet margin of a large piece of water. Rhododendrons were planted along the same lake. The *Ledum* was growing freely there, and had flowered well. Since that time Mr MARKS found it on an island on another piece of water. From the water's edge to about six feet back is one solid mass of it all around the island.

453/1. PYROLA ROTUNDIFOLIA L. From the old locality at Newham, Northumberland, E. GRAY and A. PALMER.

457/2. LIMONIUM HUMILE Mill. Abundant by the Cree, Kirkcudbrightshire, DRUCE; Conway side, Denbigh, A. WILSON.

*457/6. L. TRANSWALLIANUM Pugsl. Ballyvaghan, Co. Clare, gathered by Mr T. FOGGITT in 1898 (see Pugsley, *Journ Bot.*), but P. B. O'Kelly had collected specimens in 1891 or 1892, as *Statice angustifolia*, var. *intermedium*, from Blackhead, Co. Clare.

463/1. LYSIMACHIA THYRSIFLORA L. Near Muirkirk, Ayrshire, DRUCE.

†473/1. VINCA MAJOR L. Near Port Logan, Wigtown, DRUCE.

†473/2. V. MINOR L., var. FLORE PUNICEA. White Hill, Owlesbury, Hants, P. M. HALL.

†474/2. BUDDLEIA DAVIDII Franchet. Gore Cliff, Blackgay, Isle of Wight, MARQUAND in *Journ. Bot.*, 377, 1930; at 500 ft. above North Nibley, Gloster, C. TRAPNELL; Avon Gorge, W. Gloster, C. & N. SANDWITH.

*478/7. CENTAURIUM CAPITATUM (Willd.) Dr. Cliffs beyond Overton Gower, Glamorgan, Prof. McLEAN.

480/9. GENTIANA CAMPESTRIS L. Plentiful in two Commons near Brimpton, Berks, a new habitat for a rare plant in the county, DRUCE and CHAPPLE.

482/1. NYMPHOIDES NYMPHOIDES (L.) Dr. (N. PELTATUM Gmel.). In Sherrard's Green, near Malvern, Worcester. new to the Malvern district, F. M. DAY.

†485/2(2). GILIA CONGESTA Hook. Between Apperley and Calverley, W. Yorks [733], LEES Fl.

†487/2. NEMOPHILA MENZIESII Hook. & Arn. (N. ATOMARIA Fisch.). Burton-on-Trent, Staffs, CURTIS.

†493/2. LAPPULA LAPPULA (L.). Parc, Ventnor, Cornwall, BARRATT, ex THURSTON.

†494/1. ASPERUGO PROCUMBENS L. Field near Cherry Hinton, Cambs, shown me by Mr GILBERT-CARTER; near Lockerly, S. Hants, Miss SALMON.

†496/2. BENTHAMIA LYCOPSIOIDES Lehm. Beaumaris, Anglesey, Miss ARMITSTEAD.

†496/4. B. INTERMEDIA (F. & M.) Dr. Parc, Ventnor, Cornwall, 1929, BARRATT, ex THURSTON.

†496/5. B. MENZIESII (Lehm.) Dr. Folkestone, E. Kent, H. WALKER; Burton-on-Trent, Staffs, DRUCE.

†497/4. SYMPHYTUM PEREGRINUM Ledeb. By the Cree, Kirkcudbright, DRUCE.

†500/1. ANCHUSA SEMPERVIRENS L. Henelyn Los, Anglesey, Miss ARMITSTEAD.

†503/4. PULMONARIA SACCHARATA Miller. Alien, Europe. Hortal, introduced in 1817. Wood near Ranmore, Surrey, BURKILL. A well known garden plant.

†506/7. MYOSOTIS SYLVATICA (Ehrh.) Hoffm. Parc, Ventnor, Mullino, Cornwall, BARRATT, ex THURSTON.

†510/2. CERINTHE MINOR L. Burton-on-Trent, Staffs, DRUCE.

511/1. VOLVULUS SEPIUM Medik., var. COLORATUS Lange. Near Sandhills and Garlieston, Wigtown, DRUCE.

†513/3. CONVOLVULUS TRICOLOR L. Burton-on-Trent, Staffs, DRUCE.

†515/1. CUSCUTA EPILINUM L. Found by Miss E. VACHELL at Bozeat, Northants. The information was obtained through the kindness of the Official Seed Testing Station at Cambridge. I went over to the farm belonging to Mr Bowers. The Flax-seed was obtained from a grower of the seed at Kirby-le-Soken, Essex. At Bozeat, three fields of Flax of about 50 acres were practically ruined by this destructive parasite.—DRUCE. Miss PICKARD also found it on Flax at Glynde, E. Sussex.

†517/9. SOLANUM TRIFLORUM Nuttall. Bristol, W. Gloster, C. & N. SANDWITH.

527/3. VERBASCUM THAPSUS L. Garlieston, Wigtown, DRUCE.

527/4. V. VIRGATUM Stokes. Nailsea, Tickenham, N. Somerset, C. & N. SANDWITH.

527/7. V. FOLIOSUM in Rep. B.E.C. 128, 1929. Dr W. B. Turrill has now seen the *Verbascum* in question, and determines it as *V. longifolium* DC. He had not seen this before. I do not think Mr Fraser could ever have seen it, as the only specimen I sent away was to Germany. Dr Turrill has also re-affirmed his determination (*Rep. B.E.C.* 31, 1929) of the Windmill Hill *Verbascum* as *V. longifolium* DC.

†527/12. V. SPECIOSUM Schrad. Burton-on-Trent, Staffs, DRUCE.

†529/2. CALCEOLARIA CHELIDONIOIDES H. B. K. Lostwithiel, Cornwall, THURSTON.

532/1. LINARIA LINARIA × REPENS = SEPIUM (Allm.). Baglan, Glamorgan, R. L. SMITH.

†532/2. L. PURPUREA Mill. On a wall near Burton Point, Cheshire, DALLMAN in *N.W. Nat.* 251, 1930.

†535/1. SCROPHULARIA VERNALIS L. Sliffkey, Norfolk, H. L. GREEN.

†535/7. S. SCOPOLII Hoppe. Goatshorn, Poole Harbour, Dorset, W. VAN DE WEYER.

†537/1. MIMULUS GUTTATUS DC. Kirkinner, Wigtown, DRUCE.

†537/2. M. MOSCHATUS Dougl. Naturalised on Caerphilly mountain, originally a garden escape, in quantity on a moorland bog, Miss E. VACHELL.

539/1. LIMOSELLA AQUATICA L. *(type). Kenfig, Glamorgan, in a small pond, Dr GLUCK, Miss VACHELL, and Miss TODD.

543/8. VERONICA ANAGALLIS-AQUATICA L. Hambleden, Bucks; Wigton, Cumberland, DRUCE.

Var. AMBIGUA (Krosche). Walmer, E. Kent, 1879, CASTALIA, Countess of GRANVILLE.

Var. DASYPODON Uechtr. Badgwith, Gloster, DRUCE.

543/9. V. AQUATICA Bernh. Near Lechlade, E. Gloster, DRUCE.

543/19. V. AGRESTIS L. Hamworthy, Dorset, L. B. HALL.

Var. GARCKIANA P. Fourn. Stromness, Orkney; Fetlar, Zetland [1458], H. H. JOHNSTON. So named by C. E. BRITTON.

543/20. V. DIDYMA Ten., var. THELLUNGIANA (Lehm.). Walmer, E. Kent, 1878, CASTALIA, Countess of GRANVILLE.

545/2. EUPHRASIA BOREALIS Wettst. Holyhead, Anglesey, DRUCE.

545/3. E. BREVIPILA Burnat & Gremli. Ballyvaghan, Co. Clare, P. B. O'KELLY; Tyndrum, W. Perth. A remarkable form from Callander, Perth, DRUCE. With exceptionally tiny flowers, thin texture of foliage, long bracts, equalling, and the lower often much exceeding the calyx teeth; bracts very spreading even arcuate-recurved; very slender habit —few short slender branches; sparsely supplied with short, stout, glandular hairs on calyx and occasionally on leaves.—PEARSALL.

545/5. E. NEMOROSA Pers. Cotgrave, Notts, 1929, R. BULLEY; Loch na Lairige, M. Perth; Outershaw, Yorks; High Force, Durham, DRUCE.

Var. CILIATA Drabble. Limestone soil, Hitchin, Herts, H. PHILLIPS; Garlieston, Wigtown, DRUCE.

545/15. E. MICRANTHA Reichb. Ballyvaghan, Co. Clare, P. B. O'KELLY; Langholm, Dumfries-shire; Inchdowrie, Glen Clova, Angus; Brecon Beacon; Teesdale, Durham, DRUCE.

545/18. ? E. MINIMA Lam. & DC. Coombe and Wilbarrow, Berks and Hants, DRUCE.

545/19. E. ANGLICA Pugsl. Ebernoe, W. Sussex, LITTLE.

545/21. E. KERNERI Wettst. Walmer, E. Kent, 1879, CASTALIA, Countess of GRANVILLE; Cotgrave, Notts, R. BULLEY; Conistone, Yorks, DRUCE. 64

545/22. E. SALISBURGENSIS Funck. "Cam, Ottershaw, and on exposed table-limestone to Conistone Cold," LEES MS. in Druce's *List of Brit. Plants*, ed .i., in the possession of Mrs Foggitt. Specimens are in *Hb. Br. Mus.* Needs confirmation. A protracted search on two occasions with Mr and Mrs Foggitt failed to find it. Ballyvaghan, Co. Clare, P. B. O'KELLY.

546/4. BARTSIA VISCOSA L. Parkstone, Dorset, L. B. HALL.

548/1. RHINANTHUS MAJOR Ehrh. Near Lumsden, N. Aberdeen, W. WILSON.

548/5. R. STENOPHYLLUS Schur. Bridford, S. Devon, R. WAKEFIELD in *Dev. Rep.*

548/7. R. BOREALIS (Stern.) Dr. Loch na Lairige, M. Perth, DRUCE.

550/10. OROBANCHE MINOR Sm. Near Hove, Sussex, on *Crepis capillaris*, var. *anglica* Dr. & Thell., Miss L. ABELL.

550/11. O. RAPUM-GENISTAE Thuill. Fine specimens on Furze on a hill above Red Wharf Bay, Anglesey, DRUCE.

551/1. Lathraea Squamaria L. Hungerford, Berks, rare in the county, Miss Lawbridge.

552/1 and 2. Utricularia vulgaris L. and U. major Schmidt. *The Flora of Glamorganshire* (1911) states " There is only one modern record for any *Utricularia* in Glamorgan " (*U. vulgaris*). " In August 1929 and again with Miss E. Vadish in September 1930 I visited Oxwich Bay where *Utricularia* plants were seen in plenty, but owing to the almost complete absence of flowers (only one flowering specimen was seen in 1929 and none in 1930) determination is difficult. It is considered that both species (*vulgaris* and *major*) may be present. The matter is under investigation."—Francis Druce.

553/2. Pinguicula vulgaris L. Sandhills, Baglan, Glamorgan. Within reach of the highest spring tides, Miss E. Vachell, Melville and Smith.

†557/1. Elsholtzia Patrini Garcke. Bristol, W. Gloster, C. & N. Sandwith.

558/1. Mentha rotundifolia Huds. Two forms from the Merthyr Canal, Glamorgan, Miss E. Vachell. One with very small and dark coloured flowers and narrow panicle. Mr J. Fraser gives it no special name, but thinks it has been drawn up and starved by tall vegetation.

558/2. M. Alopecuroides Hull. Leicester, Bemrose.

558/3. M. longifolia (L.) Huds., var. Weinerniana (Opiz) Briq. Great Bentley, N. Essex [2439], G. C. Brown, teste (as with the other Menthae) J. Fraser.

558/6. ×M. piperita L. Compton Abdale, E. Gloster, J. L. Haines.

558/7. M. aquatica L. Silchester, N. Hants, Druce.
Var. subglabra (Baker). Slapton, Devon, Miss Larter.
Var. Lobeliana Becker. Hitchin, Herts, Phillips.

†558/9. × M. verticillata (L.), var. ovalifolia (Opiz) Briq. Gerrard's Cross, Bucks; luxuriant type at Callander, W. Perth, Druce.

558/10. M. gentilis L. Batheaston, N. Somerset, C. Sandwith.

558/13. M. arvensis L. Forbury, Berks; Melmerby, Cumberland, Druce.
Var. parietariifolia Beck. River-side, Sellack, Hereford, as *sativa subglabra*, 1899, A. Ley.
Var. hirtipes (Fraser). Ascott-under-Wychwood, Oxon, 1930, Druce.

558/14. M. Pulegium L. Britten's Pond, N. Hants, Mrs Willan and Lady Davy.

559/1. LYCOPUS EUROPAEUS L., var. GLABRESCENS Schmid. Glen Luce, Wigtown, DRUCE.

(All the THYMES have been kindly determined by Dr RONNIGER.)

561/1. THYMUS PULEGIOIDES L. (T. OVATUS Mill.). Hambledon Hill, Berks, DRUCE.

561/2. T. GLABER Mill. (T. CHAMAEDRYS Fr.). Churn, Greenham Common, Forbury, Berks, DRUCE.
Forma GRACILICAULE Ronn. Cothill, Berks, DRUCE.

561/4. T. SERPYLLUM L., var. LINNEANUS Gr. & Godr. Shiehallion, M. Perth; Widdy Bank, Durham, DRUCE.

561/8. T. DRUCEI Ronn. Loch na Lairige, M. Perth, DRUCE.

561/9. T. ZETLANDICUS Ronn. & Dr. Shiehallion, M. Perth, DRUCE.

561/10. T. NEGLECTUS Ronn. Ventongimps, W. Cornwall, RILSTONE; Llanberris, Carnarvon; High Force, Durham; Avebury, N. Wilts; Gentian Hill, Galway; Trearddur Bay, Holyhead, Anglesey; Garlieston, Wigtown; Outershaw, N.W. Yorks; Girvan, Ayr; Winton, Westmorland; near Langholm, Dumfries, DRUCE.

561/11. T. BRITANNICUS Ronn. Sand dunes, Perranporth, W. Cornwall, RILSTONE, as *serpyllum* agg.; Mildenhall, Suffolk, H. PHILLIPS; Gentian Hill, W. Galway; Holyhead, Anglesey, DRUCE.

562/5. SATUREIA ASCENDENS (Jord.) Dr., var. BRIGGSII (Syme) Dr. Near Charleston, Cornwall, TRESIDDER.

566/1. SALVIA PRATENSIS L. Trewsbury, E. Gloster, Miss DIANA CATOR.

†566/7. S. AETHIOPIS L. Burton-on-Trent, Staffs, DRUCE.

†566/17. S. VERTICILLATA L. Bristol, W. Gloster, C. & N. SANDWITH.

573/1. PRUNELLA VULGARIS L., var. NEMORALIS Bég. Canal-side, Market Harborough, Leicester; a tiny form of the type at 3000 ft. on Loch na Lairige, M. Perth, DRUCE.

573/2. P. LACINIATA L. Near Crab Wood, S. Hants, Rt. Hon. H. T. BAKER.

†575/1. SIDERITIS MONTANA L. Bristol, W. Gloster, C. & N. SANDWITH.

†577/2. STACHYS GERMANICA L. Bristol, W. Gloster, C. & N. SANDWITH.

577/4. S. AMBIGUA Sm. Askham Wood, N. Somerset; Garlieston, Wigtown, DRUCE; Tarleton, S. Lancs, HOLDER and WAGSTAFFE.

578/1. GALEOPSIS SPECIOSA Mill. Lumsden, N. Aberdeen, W. WILSON; Blairgowrie, E. Perth, DRUCE.

†588/2. PLANTAGO CYNOPS L. Parkstone, Dorset, L. B. HALL.

†588/19. P. TENUIFLORA W. & K. Halifax, Yorks, LEES.

600/1. CHENOPODIUM RUBRUM L., var. KOCHIIFORME Murr. Avonmouth, N. Somerset and W. Gloster, C. & N. SANDWITH.

600/2. C. CRASSIFOLIUM Horn., var. DEGENIANUM Aellen. (C. BOTRYODES Sm.). Shornesshead Fort, E. Kent, WOLLEY-DOD, as *Botryodes*; Gravesend, Kent; Yarmouth, E. Suffolk, 1904. DRUCE; ditches in Salsmouth, near Yarmouth, Suffolk, 1859, J. A. KNIGHT; Selion Island, Guernsey, BARTON; Pegwell Bay, Kent, 1867, SYME. *C. crassifolium* is an older name than *Botryodes*.

600/5. C. URBICUM L. (VULGARE). Brading, Isle of Wight; Ridge, Dorset; Aberthaw, Glamorgan, DRUCE.

Var. INTERMEDIUM (M. & K.) Moq. Winchelsea, Sussex; Bradford, Yorks, DRUCE; She Bridge, S. Hants, Canon J. VAUGHAN; Epping, S. Essex, EYRE DE CRESPIGNY; Walton-on-the Naze, N. Essex, 1867, BOSWELL SYME; Cobham, Surrey, 1866, WATSON.

†600/7. C. OPULIFOLIUM Schrad. Southsea, S. Hants, C. E. PALMER; Bristol, W. Gloster, G. PARRY; Malpas, Cheshire, WARREN; Fazackerley, S. Lancs, 1912, WHELDON, as *opulifolium × serotinum*; Grandpont, Berks; Botley, Oxon, 1891; Watton, W. Norfolk; Muirfield, Yorks; Aintree, S. Lancs; Radyr, Glamorgan, DRUCE.

600/8. C. ALBUM L., var CYMIGERUM. Slough, Bucks, DRUCE; Dedham, N. Essex, 1922, BROWN; Hovingham, N. Yorks, DRUCE.

Var. SUBFICIFOLIUM (Murr) Dr. Colchester, N. Essex; Dundee, Angus; Galashields, Selkirk; Cannock, Staffs, DRUCE.

Var. LANCEOLATIFORME (Murr) Dr. Halworthy, N. Devon, HARVEY; Kennington, Berks; Hovingham, N. Yorks; Oxford, DRUCE.

Var. VIRIDE (L.) Gray. Farnham, Surrey, 1867, WATSON; Symond's Yat, Avonmouth, W. Gloster; Odiham, N. Hants; Osney, Oxon; Colchester, N. Essex; Brill, Bucks; Ipswich, E. Suffolk; Peakirk, Northants; Hamworthy, Dorset, DRUCE.

Var. GLOMERULOSUM (Reichb.). Dedham, N. Essex, G. C. BROWN.

Var. BERNBURGENSE (Zschacke) Dr. Bradford, Yorks, DRUCE.

×ZSCHACKEI=SUBCUNEATUM Murr. Swanage, Dorset, DRUCE.

600/8. C. SUECICUM Murr. (C. ALBUM × OPULIFOLIUM Murr Mag. Bot. Lap. i., 1902, S. 341, t. iii., fig. 10. = ALBUM, sub-sp. PSEUDOPULI-

FOLIUM (J. B. Scholz); C. ALBUM, f. PSEUDO-OPULIFOLIUM J. B. Scholz in Oster. Bot. Zeitsch. 4, S. 97, 1900). Salmonby, Boston Docks, N. Lincs; Colchester, N. Essex; Osney, Oxford; Galashiels, Selkirk, 1912, DRUCE.

600/12. C. FICIFOLIUM Sm. Clapton, N. Somerset; Iver, Bucks, DRUCE.

600/13. C. GLAUCUM L. Four Mile Bridge, Anglesey; Burton-on-Trent, Staffs, DRUCE.

†600/24. C. ZSCHACKEI Murr. Brislington, N. Somerset; Southampton, S. Hants; Byfleet, Surrey; Colchester, N. Essex; Burton-on-Trent, Lichfield, Staffs; Cardiff, Glamorgan; Swanage, Dorset; Didcot, Berks, DRUCE.

Var. LATIFOLIUM (Ludv.) Aell. Symond's Yat, W. Gloster, 1929, DRUCE.

†600/29. C. AURICOMIFORME Murr & Thell. Tweedside, Selkirk, Miss HAYWARD; Bradford, Yorks, CRYER.

†600/31. C. FOETIDUM Schrad. Bradford, Yorks, CRYER.

606/5. ATRIPLEX HASTATA L. This is the *A. tatarica* from Cotgrave, Notts, in *Rep. B.E.C.*, 237, 1929, R. BULLEY.

†606/11. A. TATARICA L. A broad-leaved form from Galashields, Selkirk, DRUCE and Miss HAYWARD.

†607/1. AXYRIS AMARANTOIDES L. Near the Dyke, E. Sussex, Miss PICKARD.

611/3. SALICORNIA DOLICHOSTACHYA Moss. Coast of Glamorgan, Miss E. VACHELL.

611/9. S. DISARTICULATA Moss. Coast of Glamorgan, Miss E. VACHELL.

612/1. DONDIA (SUAEDA) FRUTICOSA Dr. Near Cardiff, Glamorgan, looking certainly native and known from there for many years, Miss E. VACHELL.

613/1. SALSOLA KALI L. Cop Saltney, Flint, F. G. DODD-THOMAS.

615/11. POLYGONUM MINUS × PERSICARIA = P. BRAUNIANUM F. Schultz. Binsey, Oxford, DRUCE, agreed to by DANSER.

†615/24. P. PLEBEJUM R. Br. Leith Docks, H. A. WEBBER.

618/3. × RUMEX ACUTUS L. Near Devizes, S. Wilts, DRUCE.

627/1. THESIUM HUMIFUSUM DC. Barry, Glamorgan, Miss E. VACHELL and R. L. SMITH.

628/8. EUPHORBIA AMYGDALOIDES L. With variegated foliage, Selborne Common, Hants, Miss BARRATT.

628/15. E. EXIGUA L., var. RETUSA DC. Ewelme, Oxon, Lady SEVERN.

642/3. BETULA NANA L. Moor of Rannoch, Argyll, DRUCE.

646/2. QUERCUS SESSILIFLORA Salisb. Creeside, Kirkcudbright, DRUCE.

650/1. SALIX PENTANDRA L. Near Port Logan, Wigtown, DRUCE.

650/2. ×S. ALOPECUROIDES Tausch. Kirkmabreck, Kirkcudbright, Mrs BLAIR IMRIE, ex C. WATERFALL.

650/4. S. TRIANDRA L., var. DISCOLOR Anders., f. LATIFOLIA Anders. Ascott-under-Wychwood, Oxon, 1930, DRUCE.
Var. CONCOLOR Anders. Cinderhill, Notts, R. BULLEY.

650/5. S. PURPUREA L. Near Glen Luce, Wigtown; Beals, Staffs, DRUCE.
×VIMINALIS = S. RUBRA Huds. Near Garlieston, Wigtown, DRUCE.

650/8. S. CAPREA × VIMINALIS = S. MOLLISSIMA Sm. Rycote, Oxon, 1930, DRUCE.

650/9. S. AURITA × CINEREA = LUTESCENS A. Kern. Port Logan, Wigtown, DRUCE.

650/12. S. ANDERSONIANA × PHYLICIFOLIA = S. FRASERII Druce. Killin, M. Perth, DRUCE.

653/2. CERATOPHYLLUM DEMERSUM L. Grangemouth, Stirling, DRUCE.

663/2. LISTERA CORDATA (L.) Br. Kinloch Rannoch, M. Perth, Hon. Mrs WILLIAMSON.

664/3. SPIRANTHES ROMANZOFFIANA Cham. (as S. STRICTA, A. J. Wilmott in Journ. Bot., 346, 1930). Col. M. J. Godfery, F.L.S., in the *Orchid Review*, 291, 1930, contends that the Southern and Northern *Spiranthes* are both *Romanzoffiana*, the same species, in opposition to the view of Mr A. J. Wilmott, who held they were distinct. Col. Godfery brings good evidence in support of his view, which is also corroborated by Prof. Fernald. It is quite evident that Rydberg's *S. stricta* will have to be degraded from specific if not from varietal rank, which was all I gave it in the *List*. The Northern and Southern plants do not appear to me to vary more than the Eastern (fen) and Western (dunal) form of *Liparis*. Viscountess STRATHCONA found it in the island of Colonsay (see *Journ Bot.*, 346, 1930). I have little doubt that it is the

"*Spiranthes autumnalis*" recorded by Mr J. B. Simpson from the island of Coll; see *Rep. B.E.C.*, 213, 1923, where I then suggested that it was *Romanzoffiana.*

667/3. Cephalanthera longifolia (Huds.) Fritsch. Ashford Common, Hants, B. L. M. Syringe, ex P. M. Hall.

668/3. Helleborus leptochila (Godf.) Dr. A small form of this Owlesbury, Winchester, S. Hants, G. W. Pierce.

669/1. Orchis purpurea Huds., var. pseudomilitaris Dr. Near Staplehurst, Kent, Stanley; Quenvais, Jersey, Lady Davy. The Jersey plant has a wonderful labellum of the outline of *O. maculata* L. vera, but has wonderful markings of dark dull crimson.

669/5. O. Morio L., var. Churchillii Dr. Brightstone, Isle of Wight (labellum 19 mm. broad), E. Drabble; fields near Didcot, Berks, Miss Porter.

669/6. O. latifolia L. Mr R. Wakefield, Elmett in Horton, N. Devon, *Dev. Rep.* One wonders what this is.

669/7. O. incarnata L. Fullerton, Hants, Gwatkin; Durnford, Cambs, typical plants, Druce.

Var. pulchrior Dr. Durnford, Cambs, Druce; Hanxton, Cambs, Gilson; distinct from type *incarnata*, and of a remarkably beautiful colour, Bowne, Holmsley Bog, S. Hants, P. M. Hall.

× praetermissa. Hanxton, Cambs, Gilson; "growing with both parents, Winton, Hants," P. M. Hall.

669/8. O. praetermissa Dr. Cutmills Pond, Surrey; Culeaze, Dorset, typical; Gentian Hill, Roundstone, W. Galway; Blackhead, Co. Clare; Watterston Bog, Cefn Bryn, Glamorgan, J. A. Webb.

Sub-var. bracteata Dr. With bracts much longer than flowers, 1 in. or more long. Cutmills Pond, Surrey, Druce.

Var. pulchella Dr. Valley, Tycroes, etc., Anglesey, Druce; Killean, Argyll, Mrs Macalister Hall, who says "the *latifolia* types are growing in peaty pastures here with various intermediate forms—side by side with dark *maculata* type."

669/10. O. maculata L., vera. Killean, Argyll, Mrs Macalister Hall, with forms approaching the var. *macroglossa*; Gentian Hill, W. Galway; Blackhead, Co. Clare; Holyhead Mt., Anglesey; Snowdon, Carnarvon; Moor of Rannoch, M. Perth (variable in colour, from nearly white to rosy purple), Druce; Austwick, N. Yorks, in a bog called Lawkland Moss, J. Frankland.

Var. vel forma gracilis Dr. Upper sepals very narrow, middle lobe of labellum longer than large side lobes, spur short and slender. Cardiff, Glamorgan, Miss E. Vachell, growing with *O. maculata*, var. *macroglossa* Dr.

×praetermissa=Hallii Dr. Killean, Argyll, Mrs Macalister Hall; Blackhead, Co. Clare; robust full flowering plants of rich colouring (some with unspotted leaves), Gentian Hill, Galway, Druce.

669/11. O. Fuchsii Dr., var. bracteata Dr. Andoversford, Gloster, Miss Abell. A tall robust plant with typical flowers, but having long leafy bracts an inch long; type plants at Killean, Argyll, Mrs Macalister Hall. Ivinghoe, Bucks, very abundant; Blackhead, Co. Clare; Gentian Hill, W. Galway, Druce; on basic soil, Watterston Bog, Cefn Bryn, Glamorgan, Webb.

Forma ovalis. Leaves roundly oval.

×maculata=O. transiens Dr. Gentian Hill, W. Galway; Blackhead, Co. Clare; Ivinghoe, Bucks, Druce.

×praetermissa=O Mortonii Dr. Gentian Hill, W. Galway, leaves scarcely spotted; Glynde, E. Sussex, Miss Pickard; Micheldever, Owlesbury, Southwick, S. Hants, P. M. Hall.

669/12. O. O'Kellyi Dr. Askham, York, Sledge.

669/14. O. mascula L., var. alba. Near Tenby, Pembroke, Mr Arnott; near Staplehurst, Kent, H. D. Stanley.

669/18. O. hircina Crantz. Morestead, near Whitchurch, S. Hants, Mrs Laurence Drummond, v.sp.; Owlesbury, S. Hants, Pierce; near Holton, N. Lincs, Miss J. Gibbons; in a new locality near Folkestone, E. Kent, H. Walker.

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672/2. Ophrys sphegodes Mill. *Near Owlesbury, S. Hants, Pierce; Winspit, Dorset, Sir M. Abbot-Anderson.

672/3. O. apifera Huds., × fuciflora = Boteroni Chodat. E. Kent, H. Walker.

Var. flavescens Rost. Newport, Isle of Wight, White, ex P. M. Hall.

674/1. Habenaria Gymnadenia Dr. Killean, Argyll, Mrs Macalister Hall.

×Orchis Fuchsii. Cheesefoot Head, S. Hants, R. L. Syringe.

Var. densiflora (Wahl.). Southwick, Hants, P. M. Hall.

674/4. H. viridis (L.) Br. Near Dover, E. Kent, H. Walker.

Var. Vaillantii (Ten.) Fern. Loch na Lairige, M. Perth, Druce.

674/5. H. intacta Benth. On Gentian Hill, W. Galway, apparently a new locality, Druce.

674/7. H. bifolia (L.) Br. Gentian Hill, W. Galway, Druce.

†678/6. Crocus zonatus J. Gay. Still appearing at Shackleford, Surrey, F. Clarke.

†683/1. TRITONIA CROCOSMIFLORA Nich. Milford Water, Hartland, G. T. HARRIS.

†684/3. NARCISSUS BIFLORUS Curtis. Copeland Isle, Donaghadee, in considerable quantity and showing no sign of being introduced, F. STOREY; I have grown some bulbs in my garden and they undoubtedly belong to this plant. In great abundance in some pasture fields near Llanddona above Red Wharf Bay, Anglesey, shown us by Miss ARMITSTEAD, DRUCE.

†685/1. GALANTHUS NIVALIS L. Abundant near Hartland, N. Devon, R. P. CHOPE in *Dev. Rep.*

689/1. RUSCUS ACULEATUS L. With yellow fruits near Dartmouth, S. Devon, R. M. MILNE in *Dev. Rep.*

702/4. ALLIUM VINEALE L., var. BULBIFERUM Syme. Henfield, E. Sussex, E. PAYNE.

†702/16. A. ROSEUM L. Vale Pond, Guernsey, Mrs HICHENS, not previously recorded from the island; near Brighton, Sussex, appears naturalised, E. PAYNE.

703/1. MUSCARI RACEMOSUM Lam. & DC. In the grass on a hedge-bank, beside a farm-cart road near Lockerly, S. Hants, known there for some years, but it has never been grown in the nearest garden, Miss SALMON.

*707/1. ORNITHOGALUM PYRENAICUM L. Near Marwell, N. Wilts, a single plant, G. W. PIERCE, ex P. M. HALL.

†707/2. O. UMBELLATUM L. Quite naturalised near Holyhead, Anglesey, Lady KATHLEEN STANLEY; Bournemouth, S. Hants, L. B. HALL.

716/1. PARIS QUADRIFOLIA L. Stourpaine, Dorset, L. B. HALL.

718. JUNCUS BICORNIS Michx. This, and not *J. tenuis* Willd., is the N. American plant which appears sporadically in Britain. Prof. Fernald has recently identified a specimen in the Kew Herbarium labelled *J. tenuis* by Mr C. E. Salmon from Crianlarich, N. Perth, as *J. Dudleyi* described by Wiegand in *Bull. Torrey Bot. Club*, 524, 1900. Both *Dudleyi* and *bicornis* are of American origin. G. C. DRUCE.

718/6. JUNCUS BALTICUS Willd. Birkdale, S. Lancs, " one stem in flower had six stamens as stated in your *Hayward*, ed. 1929; I saw a plant with three, the number stated in Hooker's *Student's Flora*," F. W. HOLDER.

718/11. JUNCUS NODULOSUS Wahl. (J. ALPINUS auct. brit.). A rush which has been much misunderstood is the super-species *J. alpino-arti-*

culatus Chaix. It includes at least three minor species—(1) *Juncus alpino-articulatus* Chaix (*mucroniflorus* Clairv.), a name which is older and supplants *J. alpinus* Vill.; (2) the *J. nodulosus* Wahl., which is our British form; (3) *J. articapillus* Drej., not known as British. *J. nodulosus* was reported by W. H. Beeby (*Scot. Nat.*, 92, 1887) as having been found by Mr Hutcheson in Glen Dole, Angus, in 1870. Buchanan White found it at Pitlochry in 1887, and in that year I got it near Loch Ennich, Easterness (see *Scot. Nat.*, 122, 1894). In 1903 I found it in some plenty on Widdy Bank, Durham, when I showed it to Dr F. A. Lees in 1909, who records it in a copy of my List. He also says that he found it on the stony slopes of Mickle Fell, N.W. Yorks. This year (1930) I again found it in considerable quantity near Langdon Beck, but failed to find it on the Yorkshire side of the Tees I have also found a hybrid of *articulatus* × *nodulosus* = *J. Buchenaui* Dorfl. G. C. DRUCE.

718/12. J. BULBOSUS L. Langevat, Harris, DRUCE.
Var. FLUITANS (Lam.) Dr. Glen Cahir, Co. Clare, DRUCE.

721/1. TYPHA LATIFOLIA L. Port Logan, Glen Luce, Wigtown, DRUCE.

721/2. T. ANGUSTIFOLIA L. Baglan, Glamorgan, E. VACHELL and R. K. SMITH.

722/2. SPARGANIUM RAMOSUM Huds. × SIMPLEX Huds. Flowers stalked, not branched. Capitule racemosely stalked, and even the lower heads variously coarser and without the yellow-green tint of *simplex*. Old Holder Bed, Yorks, LEES MS.

*727/2. LEMNA POLYRHIZA L. Wood-pit, Grangemouth, Stirling, with *L. minor* and *trisulca*, DRUCE.

729/1. ALISMA PLANTAGO-AQUATICA L., var. LANCEOLATUM (With.). Littlesea, Dorset, Miss E. VACHELL and Mrs KNOWLING.

†733/1. DAMASONIUM DAMASONIUM (L.) Dr. Pond, Stone-ferry, Hull, S.E. Yorks, LEES.

736/1. SCHEUCHZERIA PALUSTRIS L. "I have before me a dried specimen which was gathered four or five years ago in Northumberland. It was growing within a few hundred yards of the sea."—T. H. ARCHER HIN, Newton Abbott, 12th February 1889, in a letter to *The Standard*, to which Mr Temperley has recently directed my attention.

737/9. POTAMOGETON GRAMINEUS L. In Loch Kinnardochy, 1260 ft., M. Perth, DRUCE.

737/11. P. NITENS Weber. River Freshney, near Little Coates, N. Lincs, ex Rev. W. W. MASON.

737/17. P. CRISPUS L., var. SERRATUS (Huds.). Grangemouth, Stirling; Market Harborough, Leicester, DRUCE; Freshney River, Little Coates, N. Lincs, Rev. W. W. MASON.

Var. ACUTIFOLIUS Fieber. Lexden, N. Essex, G. C. BROWN, teste PEARSALL.

× MUCRONATUS = × LINTONI (Fryer) Dr. In a branch of the Trent at Burton-on-Trent, Staffs, flowering freely, DRUCE. Pearsall says it is a sound example of this hybrid.

× PUSILLUS = × P. BENNETTII Fryer. See *British Pondweeds*, t. 33. This rare hybrid was found in the wood-pond at Grangemouth, Stirling, where it does not appear to have been found for many years. After a persistent search, Mr CHAPPLE and I found it in small quantity in the classic locality last August.—DRUCE.

737/18. P. COMPRESSUS L. (P. ZOSTERIFOLIUS Schum.). Robust specimens, the *latifolius* Gray, in the Canal near Market Harborough, Leicester, DRUCE.

737/24. P. RUTILIS Wolfg. More plentiful this year in Llyn Coron, Anglesey, DRUCE.

*737/25. P. PANORMITANUS Biv.-Bernh. In the Elland Canal, Yorks, DRUCE.

†737/32. P. PENNSYLVANICUS C. & S. In the Canal between Elland and Salter Hebble, Yorks. Only the early leaves, which suggests that the floating leaves appear the following year.—DRUCE.

740/1. ZOSTERA MARINA L., var. ANGUSTIFOLIA Hornem. Kimmeridge, Dorset, Hon. Mrs CAMPBELL.

*740/2. Z. NANA Roth. Near Holyhead, Anglesey, DRUCE.

744/1. CYPERUS LONGUS L. Mideford, S. Hants, W. H. K. HOWARD.

746/2. SCIRPUS MARITIMUS L. Port William, Wigtown, DRUCE.

Var. COMPACTUS Hoffm. Compact heads of rather large sessile spikelets. St Helier's, Jersey; Newquay, Cornwall; Braunton, N. Devon; Wareham, Dorset; Bemridge, Isle of Wight; Christchurch, Hayling Isles, S. Hants; Tilbury (Bishop GOODENOUGH), Great Holland, S. Essex; Southwold, E. Suffolk; Arthog, Merioneth; Holm Cullum, Cumberland; Ince Blundell, Ainsdale, Southport, Freshfield, S. Lancs; Girvan, Ayr, DRUCE.

Var. MACROSTACHYS (Willd.). Kennack, Cornwall; Walmer, E. Kent, CASTALIA, Countess of GRANVILLE; Haddiscoe, Norfolk; Oxlode, Cambs, 1884, FRYER; Hammersmith, Middlesex, Lady DAVY; Helsby, Cheshire, WATERFALL; Dunbar, Haddington, Miss TODD; Ramsey, Hunts; Loch Duich, W. Ross; Shannon Shore, Limerick (the two latter not extreme examples), DRUCE.

Var. MONOSTACHYS Meyer. Bar Sands, Key Haven, S. Hants, J. COMBER; Southend, S. Essex, WOLLEY-DOD; Dersingham, W. Norfolk; Church Bay, Glamorgan; Fleetwood, Lancs; Aultbea, W. Ross, DRUCE; Portbury, N. Somerset, N. SANDWITH.

746/4. S. TABERNAEMONTANI Gmel. Rycote Pond, Oxon, Lady DAVY. I think this has come in since 1882, when I worked this piece of ornamental water, on which large numbers of water-fowl congregate. Another locality of old standing in the county—Ambrosden—is a few miles away. At Rycote there is a considerable quantity on the western side of the water, DRUCE.

746/10. S. HOLOSCHOENUS L. Five good sized tufts of it at Barry, Glamorgan, DRUCE.

†746/12. S. FILIFORMIS Savi. Wool alien, Meanwood, Yorks, LEES.

746/13. S. FLUITANS L. Walney Isle, SLEDGE.

746/15. S. RUFUS (Huds.) Schrad. With the so-called var. BIFOLIUS (Wallr.), Four Mile Bridge, Tycroes, Anglesey, DRUCE.

748/1. RYNCHOSPORA FUSCA (L.) Ait. Glen Nevis, Westerness, WEBB; spec. non vidi.

753/4. CAREX VESICARIA L. Ballyvaghan, Co. Clare, DRUCE.

[753/10. C. PENDULA L. Stavros, Cyprus, DRUCE. New to the island.]

753/14. C. CAPILLARIS L. Approaching the so-called var. *major*, Loch na Lairige, 3000 ft., M. Perth, DRUCE.

753/15. C. BINERVIS Sm., var. ALPINA Drej. Loch na Lairige, M. Perth, 2600 ft., DRUCE.

753/17. C. DISTANS L. Valley, Tycroes, Anglesey, DRUCE.

753/19. C. FULVA Host. Glen Cahir, Co. Clare, DRUCE.

753/23. C. EXTENSA Good. Valley, Holyhead, Anglesey, DRUCE. [Larnaca, Cyprus, DRUCE. New to the Island.]

753/26. C. ORNITHOPODA Willd. Scout Scar, Kendal, Westmorland, J. B. FOGGITT.

753/32. C. PILULIFERA L. Broughton Wood, Lincs, Rev. W. W. MASON.

753/38. C. LIMOSA L. East Burton, Dorset, L. B. HALL.

753/41. C. ATRATA L. Loch na Lairige, M. Perth, DRUCE.

753/46. C. GRACILIS Curt., var. Fruit narrowed above and below, shorter than the bracts. By the Tees, on the Yorkshire side near Winch Bridge. In *Fl. N. Yorks*, it is only given at 200 ft. alt.—DRUCE.

753/61. C. PAIRAEI F. Schultz. Near Helston, Cornwall (locus classicus, where I added it to the British Flora in 1906), THURSTON.

*753/63. ×C. BOENNINGHAUSIANA Weihe. Glynde, E. Sussex, Miss PICKARD.

753/74. C. PULICARIS L. Splendid flowering specimens on Blackhead, Co. Clare; Gentian Hill, W. Galway, DRUCE.
Var. MONTANA (Pugsl.). Loch na Lairige, M. Perth, DRUCE.

†754/2. PANICUM CAPILLARE L. Bristol, W. Gloster, C. & N. SANDWITH.

†754/10. P. SANGUINALE L. Bristol, W. Gloster, C. & N. SANDWITH.

†756/2. SETARIA VIRIDIS (L.) Beauv., var. WEINMANNI (R. & S.) Dr. Wilton Rectory, Wilts, Hon. Mrs CAMPBELL.

758/3. SPARTINA TOWNSENDII H. & J. Groves. "I do not know whether this should be included as an alien, but it has lately arrived in small patches on the mud in the Channel, beyond the actual docks at Avonmouth but in the dock area. Presumably it has come from Berkeley, W. Gloster, where it was planted. I have not the actual date or record, but it was interesting to find it establishing itself at Avonmouth, W. Gloster, this year.—C. & N. SANDWITH.

†761/1. BECKMANNIA ERUCIFORMIS (L.) Host. Bristol, N. Somerset and W. Gloster, C. & N. SANDWITH.

†762/1. ELEUSINE INDICA Gaertn. Bristol, W. Gloster, C. & N. SANDWITH.

†765/3. PHALARIS AQUATICA L. Bristol, N. Somerset, C. & N. SANDWITH.

†765/6. P. BRACHYSTACHYS Link. Bristol, N. Somerset, C. & N. SANDWITH.

770/3. ALOPECURUS MYOSUROIDES Huds. Beaumaris, Anglesey, Miss ARMITSTEAD.

770/4. A. BULBOSUS Gouan. Wivenhoe, N. Essex, [2343], BROWN, June 26, 1926. Sent as a form of *geniculatus*.

777/1. PHLEUM PRATENSE L., det. E. Schmidt. Didcot, Berks, 1929, DRUCE, teste SCHINZ. (Determined at Kew as *P. alpinum* forma.) Snowdon at 3500 ft., Carnarvon, DRUCE.

Var. nodosum (L.) Schreber. Purn, N. Somerset; Holyhead, Anglesey, Druce; Orme Head, Carnarvon, J. W. Frankland.

†778/1. Mibora minima (L.) Desv. Found on a gravel path at Stewart's Nurseries, Ferndorne, Bournemouth, S. Hants, Mrs Phelps, ex Mrs Foggitt.

780/2. Agrostis alba L., var. sylvatica (Host). Delamere Forest, Cheshire, Waterfall.

780/3. A. pumila L. One of the foreign visitors to the Botanical Congress visited Teesdale and told me he thought he had found *Phippsia algida* there. His specimens were not available, so I motored up to the exact spot by the Tees where he thought he had gathered it. We found the place without difficulty, and there we saw—what he had evidently mistaken for *Phippsia*—a considerable quantity of *Agrostis pumila*, even smaller than usual. The habitat was not suitable for *Phippsia*. The station is in Durham.—Druce.

†782/5. Polypogon linearis Trin. Oxley, Leeds, Yorks (as *lineatus*), Lees, teste Hackel.

783/4. Calamagrostis neglecta (Ehrh.) Beauv. Castle Howard Woods, Yorks, in *Hb. F. J. Hanbury*, teste Ar. Bennett in *Nat.*, 95, 1915. Lees says " it is not like his gathering."

791/1. Deschampsia caespitosa (L.) Beauv., var. alpina Gaud. (non L.). Ben Lawers, M. Perth, Hon. Mrs Campbell.

791/4. D. flexuosa (L.) Trin., var. montana (L.) Hook., f. Loch na Lairige, M. Perth, Druce.

792/2. H. lanatus L., var. albovirens Reichb. Cothill, Berks, Druce.

†794/5. Avena sterilis L. Cardiff, Glamorgan, Miss E. Vachell.

795/1. Arrhenatherum elatius (L.) M. & K., var. pauciflorum (Baenitz) Dr. Mount Sorrel, Leicester, Sowter.

Var. biaristatum (Peterm.) Dr. Wool, Wareham, Dorset; Bournemouth, S. Hants, L. B. Hall.

795/2. A. tuberosum (Gilib.) Dr. Hambleden, Bucks; Marlborough, N. Wilts; Mells, N. Somerset; Fairford, E. Gloster; High Force, Durham; Port Logan, Glen Luce, Wigtown; Girvan, Ayr; Linlithgow; Falkirk, Stirling; Callander, W. Perth; Lichfield, Staffs; Ufton, Warwick, Druce.

802/1. Phragmites Phragmites (L.) Dr., var. flavescens (Cust.) Dr. Sandown, Kent, Castalia, Countess of Granville.

Var. subuniflora (DC.) Dr. Port William, Wigtown, Druce.

†808/1. Cynosurus echinatus L. Brighton Downs, E. Sussex, Miss Robinson; Fetcham, Surrey, 28 inches high, Burkill; Rhosniger, Beau-

maris, Anglesey, Miss ARMITSTEAD; Langley, Bucks; Burton-on-Trent, Staffs, DRUCE.

809/3. KOELERIA BRITANNICA (Domin). Calne, Wilts; Cahir, Co. Clare, DRUCE; Lincoln, ex Rev. W. W. MASON.

*809/4. K. ALBESCENS DC. Kynance Downs, W. Cornwall, DRUCE.

†809/6. K. PHLEOIDES Pers. Bristol, N. Somerset, C. & N. SANDWITH.

†815/2. ERAGROSTIS ERAGROSTIS (L.) Dr. Bristol, W. Gloster, C. & N. SANDWITH; Splott, Cardiff, Glamorgan, R. L. SMITH.

†816/1. SPHENOPUS DIVARICATUS (Gouan) Reichb. Guernsey, 1927, Lady DAVY. A very striking species which is an addition to the adventive Flora of Guernsey. I saw it near Larnaca, Cyprus, this year.—DRUCE.

†819/2. DACTYLIS HISPANICA Roth. Burton-on-Trent, Staffs, DRUCE.

824/2. POA PRATENSIS L., var. ANGUSTIFOLIA (L.). High Force, Durham, DRUCE.

Sub-var. COLLINA Schur. Sands, W. Ross; Burnham, N. Somerset, DRUCE.

*824/4. P. IRRIGATA Lindm. Llanddona, Anglesey (new to Wales); near Winch Bridge, Durham, DRUCE.

824/8. P. BALFOURII Parn. Loch na Lairige, M. Perth, DRUCE.

824/10. P. COMPRESSA L. Bournemouth, S. Hants, L. B. HALL.

825/7. GLYCERIA BORRERI Bab., det. E. Schmidt. Shoreham, W. Sussex, Miss PICKARD; Cardiff, Glamorgan, DRUCE.

826/1. FESTUCA RIGIDA (L.) Kunth. Plymouth, S. Devon, Dr WILLOUGHBY-SMITH.

826/5. F. SYLVATICA Vill. Winch Bridge, Durham, DRUCE.

826/9. F. OVINA L., var. HISPIDULA Hack. Swanage, Dorset; Kingston Vale, FRASER.

Var. FIRMULA Hack. Kingston Vale, FRASER.

826/11. F. LONGIFOLIA Thuill. (DURIUSCULA L.). Littlestone, E. Kent, DRUCE.

826/12. F. CAPILLATA Lam. Loch na Lairige, 2700 ft., M. Perth; Holyhead Mountain, Anglesey, DRUCE.

827/6. BROMUS RAMOSUS Huds., var. EU-RAMOSUS (A. & G.). Silk Willoughby, Lincs, 1926, Rev. W. W. MASON.

827/17. B. PRATENSIS Ehrh. Burton-on-Trent, Staffs, DRUCE.

827/19. B. HORDEACEUS L., var. LEPTOSTACHYS (Pers.) Beck. Potter Heigham, E. Norfolk [2438], 1928, G. C. BROWN; Riever Wood, Berks, DRUCE.

*827/19(2). B. BRITANNICUS Williams. Sydenham Station, Co. Down, C. D. CHASE; Stourpaine, Blandford,' Wool, and near Poole, Dorset, L. B. HALL.

827/21. B. INTERRUPTUS Dr. Bristol, W. Gloster, C. & N. SANDWITH.

†827/26. B. MACROSTACHYS Desf. (=B. OXYODON Schrank). Frizinghall, Yorks, RHODES.

836/3. ELYMUS EUROPAEUS L. Edge of a wood, W. Gloster, Hon. Mrs CAMPBELL.

†836/4. E. CAPUT-MEDUSAE L. Bristol, N. Somerset, C. & N. SANDWITH.

844/1. EQUISETUM MAXIMUM Lam. Glen Cahir, Co. Clare, DRUCE.

844/3. E. SYLVATICUM L. Near Girvan, Ayr, DRUCE.

849/1. BLECHNUM SPICANT (L.) With., var. BIFIDUM Wollaston. Trevannick, St Austell, Cornwall, L. T. MEDLIN, ex THURSTON.

851/7. ASPLENIUM RUTA-MURARIA L., var. PSEUDO-GERMANICUM Heuf. Wall near Llyn Coron, Anglesey, DRUCE.

854/1. POLYSTICHUM SETIFERUM (Forsk.) Woynar, var. AMBILOBUM. Trewsbury, E. Gloster, DRUCE.

856/1. DRYOPTERIS FILIX-MAS (L.) Schott., var. LINEARIS. Achill Island, W. Mayo, DRUCE.

856/5. D. AEMULA Kuntze. The Rivals, Carnarvon, Miss E. VACHELL.

867/1. PILULARIA GLOBULIFERA L. Walney Isle, N. Lancs, SLEDGE.

872/2. NITELLA OPACA Ag. Loch Lubnaig, M. Perth; Letterkenny, Donegal, DRUCE.

876/5. CHARA HISPIDA L. Stackpole, Pembroke, Hon. Mrs CAMPBELL.

876/7. C. CONTRARIA Kuetz. Llyn Coron, Anglesey, DRUCE.

876/16. C. FRAGILIS L. Glen Cahir, Co. Clare, DRUCE.

876/17. C. DELICATULA Ag. Ballyvaghan, Co. Clare, P. B. O'KELLY; near Loch Lubnaig, M. Perth; Byfield, Northants; Lizard Downs, Cornwall, DRUCE.

NOTES ON POTAMOGETON.

WILLIAM HARRISON PEARSALL.

II. THE LARGER BRITISH SPECIES.

In our previous paper (*Rep. B.E.C.*, 1929) we dealt with the linear-leaved species only, and as a revision of all the British species of *Potamogeton* is long overdue, we propose to include the remaining species in the present communication. Botanists anxious to take up the study of these interesting plants are greatly handicapped by the brief and inadequate descriptions available in our ordinary Floras. Many of these have remained (unaltered) during nearly half a century of great progress in the critical study of the genus and, moreover, still retain names long since discarded. Our present aim is, therefore, to give adequate descriptions of the various species, more important varieties and hybrids, given in the *London Catalogue* of 1925—emended where necessary—and especially to emphasise the characters which distinguish them from others. Nomenclature will be given in sufficient detail to enable all the older names to be placed under their modern equivalents and the authorities for these will be quoted at length. In the case of the rarer forms references to the original sources wherein full descriptions may be found will be given, and we shall be pleased to supply these to anyone unable otherwise to procure them. A residence of over thirty years in the English Lake district has afforded us exceptional facilities for studying these plants in their natural habitats, and largely as a result of this we were privileged to enjoy a long correspondence with the late Mr Arthur Bennett and also with Dr J. O. Hagström, to both of whom we are very greatly indebted. Quite incapable of being adequately expressed is the writer's high appreciation of the collaboration of his son—Dr W. H. Pearsall—who shares a common interest in these plants and who has undertaken valuable cultural experiments on their growth under varying conditions.

Conflicting opinions have been advanced as to the value of the study of *Potamogeton* species under cultivation, Fryer and Bennett attaching to it the utmost importance while Hagström considers its value overrated and strongly advocates the study of the plants under natural conditions. We support the latter view, so far as cultivation under artificial and fixed conditions is concerned, as results are thus frequently obtained which would be impossible under the constantly changing conditions of Nature. To take one instance only, Fryer cultivated *P. Drucei* for years and found it to "produce fruit freely." Under natural conditions it behaves as most *Potamogeton* hybrids do, normally producing only abortive fruits and occasionally—under exceptionally favourable conditions as to light intensity and carbohydrate synthesis—yielding a few mature fruits but never producing fruit freely. On the other hand, we attach the greatest possible value to the comparative results obtained by the cultivation of a species under varying conditions of light, soil and water, especially when the cultural experiments are undertaken after long experience of the plant's variations under natural conditions—see under *P. perfoliatus*.

There is still a vast amount of field-work to be done in observing and noting the ecological conditions under which the various species grow. Collectors rarely give any details as to depth of water, its clearness or turbidity, the nature of the bottom—gravel, sand, mud, silt, limestone or other rock—or record the names of any other *Potamogeton* species growing in the same water. These data are of prime importance, especially in dealing with hybrids, and both Dr Hagström and Mr Arthur Bennett repeatedly deplored our lack of reliable information on these points. We trust, therefore, that students of the genus will in future make an effort to add to the value of their gatherings by giving as many details of these habitat conditions as possible.

Any attempt to draw up a Key to the various species of *Potamogeton* is more than ordinarily difficult owing to their extreme variability under different ecological conditions. When both floating leaves and mature fruits are present there should be little difficulty in determining the plant from descriptions, but as it is far more usual to collect plants possessing neither of these characters, the following Keys contain no reference to fruits and little to floating leaves as a basis of classification. The first Key deals with the leaves as a whole—both floating and submerged—and should enable the student to refer a plant to its correct group, after which the detailed descriptions should be consulted. The second Key is an attempt to classify the plants into groups by the shapes and average sizes of the submerged leaves only. Here again the full descriptions are necessary for final elimination.

A word of warning as to the use of these descriptions appears to be necessary. Students too often fail to differentiate between the description of a species and that of a hybrid, although there is the greatest difference between them. In the case of a species the characters, though variable, are more or less fixed between narrower limits. They have been long established and are therefore more stable. They have been so frequently and fully described that errors of description have been largely eliminated and the plant usually " fits " its description. On the other hand the characters of hybrids vary between the widest limits, these including the extremes of each of two dissimilar species. Moreover, these characters are much less stable, are still in process of evolutionary change, are less well known and therefore more imperfectly described. As a consequence no description of a hybrid can be relied upon in every case; frequently a specimen very nearly approaches in character one of its putative parents, while another (even from the same water) may have been more strongly influenced by the other parent. The literature of *Potamogeton* is inordinately full of the conflicting opinions of authorities who have failed to realise the fact that all hybrid forms vary between the extreme limits of two species, either of which may have exerted the dominant influence upon the characters of the resultant hybrid. One result of this has been the establishment of many so-called "species" which have subsequently proved to be mere forms of a variable hybrid. To give one example only—that of the hybrid *P. nitens*—this includes *P. salicifolius* Wolfg. ex Schultes (which is the *P. decipiens* var. *salicifolius* Ar. Benn.), *P. salignus* Fryer, *P. falcatus* Fryer and *P. involutus* Fryer. These greatly differ from each other but none of them possesses any character not included among those of *P. nitens*—*i.e.*, among the aggregate characters of *P. gramineus* and *P. perfoliatus*. Many similar examples will be found in the text.

I. KEY TO THE LEAVES OF THE MORE COMMON BRITISH SPECIES.

A. ALL LEAVES SESSILE. All are submerged (exc. 6) and similar.

(a) Stipules free from the leaf.

1. P. PRAELONGUS. *Apex always hooded*—splits when flattened. Leaves long (to 10 in.), broadest near the rounded base, narrowed upward, blunt.
2. P. PERFOLIATUS. *Leaves obviously clasping.* Very variable in shape on different plants—oval to lanceolate, cordate-amplexicaul—but similar on the same plant.
3. P. DECIPIENS. Broadly elliptical, obtuse, not hooded nor amplexicaul. All submerged, rounded at base, 3 in.-4¾ in.: resembles *P. lucens* but is much smaller and possesses no stalked leaves.
4. P. CRISPUS. Lanceolate or linear-lanceolate, margins finely serrate and usually undulate and crisped. Leaves 1½ in.-3½ in.
5. P. COOPERI. Leaves semi-amplexicaul, much broader than 4, ovate or lanceolate, strap-shaped with rounded base and blunt apex—not crisped nor serrate but margins always provided with microscopic denticles. Rare.
6. P. NITENS var. SUBPERFOLIATUS. Leaves lanceolate, rounded-cordate at the base, margins with minute denticles. The only species in (a) occasionally producing floating leaves, also sessile.
(When lacking floating leaves—which is often the case—the following species are included here, *P. nitens*, *P. gramineus*, *P. lanceolatus*—see C. (a).)

(b) Stipules adnate or axillary to the leaf-base, sheathing.

7. P. PECTINATUS. Leaves all submerged, alternate, linear, tapering to a keen point usually, rarely blunt. Stipules axillary, sheathing.
8. P. FILIFORMIS. Leaves longer, narrower, *hair-like*, never gradually tapering to a keen point, usually quite rounded and blunt, occasionally with a tiny mucro.—as seen under the microscope. Stipules adnate, sheathing.

(c) Stipules absent (except to the involucral leaves).

9. P. DENSUS. Leaves opposite, or nearly so.

B. ALL LEAVES STALKED.

(a) Floating leaves and submerged leaves of different shapes.

1. P. NATANS. Very common species, fruiting freely. Known at a distance by its involute emerged leaves. Petiole "jointed" a little below the blade. Submerged leaves bladeless (phyllodes), leafless petioles only. Floating leaves large, thick, coriaceous, opaque, elliptical or ovate.
2. P. POLYGONIFOLIUS. Floating leaves less opaque, subcoriaceous, no "joint" below the blade and no phyllodes. Submerged leaves pellucid, narrowly lanceolate, often very long, gradually tapering into the petiole. Lowest occasionally with a narrowly linear-lanceolate lamina, but is not a phyllode.
(Four rare and critical hybrids not producing fertile fruits.)

3. P. CRASSIFOLIUS. (*P. angustifolius × natans*)? Cambridgeshire only. All leaves thick and fleshy when fresh, very thin when dried. Floating leaves like *P. natans*, petioles not longer than blades. Submerged leaves linear or gradually narrowed to the petiole, soon decaying. Many examples so labelled are *P. lucens × natans* (see 6).
4. P. SPARGANIFOLIUS. (*P. gramineus × natans*) = (*P. Kirkii* Syme). Three English and two Irish counties. Floating leaves narrowly lanceolate, occasionally oblong, usually narrower than the floating leaves of 6, with petioles longer than the blades which are not (or only shortly) cuspidate. Submerged leaves extremely long (6 in.-15 in. or more) and very narrow.
5. P. BILLUPSII. (*P. coloratus × gramineus*). Very rare Fenland form. Floating leaves with very slender stalks greatly exceeding the thin oblong-elliptic blades. Submerged leaves lanceolate or variable, blade longly decurrent.
6. P. STERILIS. (*P. lucens × natans*) = *P. fluitans* Roth. Surrey, Sussex, Huntingdon and Cambs. Floating leaves few, broadly lanceolate, subcoriaceous, narrowed at each end, apex strongly cuspidate. Submerged leaves narrowly lanceolate insensibly narrowed into a long petiole.

(b) Floating leaves and submerged leaves of the same (or similar) shape. (Both species of beautiful venation.)

7. P. COLORATUS, a plant of stagnant peaty water, common in the Fens. All leaves with short stalks and fine transparent reticulation. Upper leaves elliptical or oval, rounded below, usually obtuse at the apex and shorter than 8. Lower leaves tapering to the base, ± lanceolate.
8. P. DRUCEI. R. Loddon, Berks, and R. Avon, at Bath, only. All leaves with long stalks, blades 4 in.-7 in. × 1½ in.-2 in., very uniform in shape, narrowed at each end. The most beautiful foliage of any British species of the genus.

(c) No floating leaves.

9. P. LUCENS. The largest British species. Leaves apparently sessile but always shortly stalked—up to 8 in. × 2⅜ in., usually 1½ in.-2 in. wide—oblong-lanceolate, glistening, with long cusp and finely serrulate margins.

C. SOME LEAVES STALKED, OTHERS SESSILE, ON THE SAME PLANT.

(All species in this section are frequently found lacking floating leaves and therefore more difficult to determine.)

(a) Floating leaves stalked, submerged leaves sessile.

1. P. GRAMINEUS. Floating leaves narrowed at each end with lamina usually shorter than the petiole. Submerged leaves linear-lanceolate with *tapering bases* and serrulate margins. A dense mass of submerged vegetation at the base of the stem: var. *graminifolius* (Fr.) is less branched and has very long submerged leaves.
2. P. NITENS, vars. *subgramineus* and *subintermedius*. Floating leaves acute, with long tapering bases. Submerged leaves lanceolate, *rounded-cordate at the base*, margins with small and very fugacious denticles.
3. P. LANCEOLATUS Smith. (*P. alpinus × pusillus*). Anglesea and Cambridge only. Floating leaves small, narrow-lanceolate, blunt or subacute. Submerged leaves linear-lanceolate, *entire*, with *smooth margins*.

(b) Floating leaves stalked—some submerged leaves sessile, others shortly stalked, on the same plant.

4. P. ALPINUS. Floating leaves *obovate, blunt*, with *sloping base* and *petioles* shorter than the laminæ. Submerged leaves lanceolate, narrowed at both ends, subsessile or shortly stalked, *blunt*, usually tinged with red or purple, 6 in.-8 in.

5. P. ANGUSTIFOLIUS. (*P. Zizii* M. & K.). All leaves ± alike on the same plant—oblong-lanceolate, narrowed below, sessile or shortly stalked, *minutely denticulate on the margins and always cuspidate*, gradually or suddenly (see description). Floating leaves are occasionally produced and these possess longer stalks, which are, however, never longer than the blades.

II. KEY TO THE SHAPES AND SIZES OF SUBMERGED LEAVES ONLY.

1. Broadly elliptical, oval or ovate.
   - (a) *P. coloratus*, blade to 5 in. with short stalk.
   - (b) *P. Drucei*, blade 4 in.-7 in. × 1½ in.-2 in. with long stalk.
   - (c) *P. perfoliatus*, oval or suborbicular, clasping.
2. Broadly oblong, base and apex ± rounded.
   - (a) *P. decipiens*, normally 3 in.-4¾ in. long, but var. *longifolius* may be 6 in.-8 in. × ¾ in.: apex not hooded.
   - (b) *P. praelongus*, 2 in.-10 in. long, tapering upward to the *hooded apex*.
   - (c) *P. Cooperi*, usually about 2 in.-⅝ in. but may be less or more: semi-amplexicaul, apex blunt.
3. Broadly lanceolate, tapering above and below, greatest width usually over 1½ in.
   - (a) *P. coloratus* (see above), known by its venation.
   - (b) *P. lucens*, the largest British species, up to 8 in. × 2⅜in.—usually 1½ in.-2 in. broad (*P. angustifolius* is rarely over 1⅛ in. broad), *apparently sessile, but very shortly stalked.*
4. Lanceolate, tapered above and below, greatest width usually not exceeding 1 in.
   - (a) *P. angustifolius*, up to 6 in. × 1⅛ in. but usually narrower, sessile or shortly stalked, *margins finely denticulate, apex cuspidate.*
   - (b) *P. polygonifolius*, 6 in.-8 in., often absent in shallow water forms, and very long in deep water. Petioles moderately or very long. Margins entire, apex not cuspidate.
   - (c) *P. alpinus*, 6 in.-8 in., sub-sessile or shortly stalked, reddish in colour, *apex blunt, margins entire.*
   - (d) *P. perfoliatus* var. *gracilis* Cham. et Schl., relatively long and narrow, obtuse leaves 2 in.-4 in. long and ± ½ in. wide, *clasping.*
   - (e) *P. Billupsii*, a very rare Fenland hybrid with longly decurrent laminæ to the long petioles of its extremely variable leaves, is included here—see description.
5. Narrowly lanceolate or linear-lanceolate, tapered above and below, normally ¼ in.-½ in. wide (often less, very rarely more).
   - (a) *P. gramineus*, 1 in.-6 in., *narrow tapering bases*, serrulate margins and sharp apex.
   - (b) *P. nitens*, 3 in.-6 in., very similar to the preceding and commonly confused with it. All branch-leaves *rounded-cordate at the base*, margins with very small fugacious denticles.
   - (c) *P. crispus*, 1½ in.-3½ in., shortly tapered base, apex usually blunt and margins serrulate and crisped.
   - (d) *P. densus*, leaves short, rarely over 1¼ in., *amplexicaul* and *opposite*. Stipules absent from most.
   - (e) *P. sparganifolius* (*P. Kirkii*), very long, 6 in.-15 in. or more, and very narrow, ⅜ in. or less; lamina passing insensibly into the petiole; entire and persistent.
   - (f) *P. sterilis* (*P. fluitans*)—difficult to separate from the preceding—leaves long, entire, longly petiolate, lamina similarly narrowed into the petiole but usually broader and more variable than in *P. sparganifolius*, but equally persistent.
   - (g) *P. crassifolius*, submerged leaves few, fleshy, distant, long, soon decaying. **Cambs. only.**
   - (h) *P. lanceolatus*, long, nearly parallel-sided, sessile, entire, apex obtuse or sub-acute. Anglesea and Cambs. only.

6. Narrowly linear, parallel-sided, under ¼ in. (6 mm.) wide.
   (a) The linear-leaved species—see paper I. (1929).
   (b) The phyllodes of *P. natans* and occasionally of a few other species or hybrids.
7. Linear threads.
   P. pectinatus and *P. filiformis*—the latter much finer than the former.

Detailed Descriptions of the British Forms, in the Order of the *London Catalogue*, ed. xi., 1925, emended.

P. NATANS Linnaeus, *Species Plantarum*, 1753, 126. *P. serotinus* Schrader in Koch, *Syn. Fl. Germ.*, 1844, 775.

The late Mr Arthur Bennett agreed that our specimens from Glenridding, Ullswater, Westmorland, 15th August 1919, were as nearly identical with the original *Species Plantarum* examples as it was possible to be. This species is widely distributed and easy to identify among associated species—even at a distance—by its involute emerged leaves. Stem stout, round, sparingly branched, often over 40 in. long in deeper water. Leaves all stalked, coriaceous, entire, flat. Floating leaves normally ovate, but may be elliptical, or nearly round, from 2.5-12 cm. long, acute or obtuse. Base may be cordate (especially in the upper leaves) or more normally narrowed into the petiole which shows a flexible discoloured joint just below the blade. The nerves are numerous, usually 25-27 in the involucral leaves, with somewhat indistinct transverse venation. The submerged leaves are reduced to long, narrow linear phyllodes—petioles and midribs, " with very rarely a limb." These may be up to a foot in length, canaliculate toward the tip, 5-nerved, and with obtuse apexes. Stipules very long—usually 10 cm., may be 18 cm. and exceeding the internodes—with strong longitudinal fibres which persist. Usually there is only 1 spiciferous branch. Spikes cylindrical, 3-6 cm., thick, densely flowered. Peduncles stout, often slightly flattened below and narrowed above, usually 2-3 times the length of the spike. Fruit large (4 mm. or more), slightly compressed, dorsally much rounded, often semicircular, acutely keeled when dry. Ventral margin convex. Beak short. Dried fruit usually with a small deep pit in the sides.

The following forms are British:—

Var. *prolixus* Koch (*fluviatilis* Fries).

Floating leaves oblong-lanceolate, thin and pellucid—an early state of running water.

Var. *ovalifolius* Fieber.

Leaves ovate-oblong, about 11 × 3 cm., obtuse, base rounded or obscurely cordate, usually shortly petiolate. A small form of this (f. *pygmaeoides* Hagstr.) with leaves 6-7 cm. × 2 cm. is recorded from M. Perth.

Var. *rotundifolius* Bréb.

Leaves large, short, very broadly ovate or nearly round with cordate base.

Var. *terrestris* Gray is the variable sub-terrestrial form of this species.

The largest floating leaves yet seen in British examples measured 4½ in. × 2¾ in. (114 × 70 mm.) and were referred (*Journ. Bot.*, 1919, 10) to f. *maximus* Baagöe.

P. GESSNACENSIS Fischer (*P. natans*×*polygonifolius*), *Die Bayer, Potam.*, 1907, 31, 42-43, and earlier in *Mitt. Bayer. Bot. Ges.*, 1905, 472.

Both these references are to Bavarian specimens, but a form gathered from the Upper Lake, Killarney, Kerry, R. M. Barrington, 27th June 1874 is referred to this hybrid by Dr J. O. Hagström under the name f. *hibernicus* Hagstr.—See *Crit. Res.*, 1916, 192. This plant has, at various times, been considered a form of *P. natans* or of *P. polygonifolius* and was first distributed as *P. natans* × *polygonifolius* by Dr G. C. Druce—*Rep. B.E.C.*, 1911, i., 321. I have seen a sheet of this distribution with Dr Hagström's autograph determination and note attached.

P. POLYGONIFOLIUS Pourret, *Memoir. Acad. Toulouse*, iii., 1788, 325. *P. oblongus* Viviani, *Anal. Bot.*, i., 2, 1802, 102. *P. Hornemanni* Meyer, *Chloris Hanoverana*, 1836, 521, nec Koch.

Stem terete, slender, freely creeping and sending up short leafy branches at irregular intervals. In shallow water only an inch or two long. Leaves all stalked, less coriaceous than those of *P. natans* and more variable than those of *P. coloratus*, which are all pellucid. Floating leaves subcoriaceous, elliptic to lanceolate, cordate or more normally narrowed into the petiole which is short or long in shallow water and very long in deep water, not jointed below the lamina. Size, up to 9 × 4.5 cm. Submerged leaves membranous, pellucid, gradually narrowed into the petiole, narrowly lanceolate, often very long and very narrow. Lowest occasionally narrowly linear-lanceolate but a lamina not a phyllode. Lake District examples are commonly 6 in.-8 in. long and about ¾ in. wide (150-200 mm. × 20-25 mm.). Stipules long (2-4 cm.), blunt, and subpersistent. Spike shorter and more slender than that of *P. natans*, densely flowered and fruited. Peduncles slender, equal (uniform in thickness), many times the spike. Fruit small (2-2.5 × 1.5 mm.), often reddish-brown. Beak short. Dorsal margin rounded when fresh, with faint ridges when dry.

The British forms are well covered by the three varieties given in the *L.C.*

Var. *lancifolius* Cham. et Schlecht.

Has floating leaves narrow, lanceolate, one or two of the upper ± cordate at the base, but those below these are usually rapidly or more gradually narrowed to the petiole. The submerged leaves are normally very long and narrow, gradually tapering at each end of the lamina—*pseudo-fluitans* Syme is included in this variety.

Var. *cancellata* Fryer, *Pots. Brit. Isles*, 1915, 21.

A beautiful form from Shetland, producing few subcoriaceous floating leaves and submerged leaves lanceolate, thin, translucent and possessing the fine reticulated venation of *P. coloratus*. This latter character has led to the plant being considered a hybrid by various writers. Graebner in Engler, *Pflanzenr.*, iv., 11, 1907, 136, refers it to *P. gramineus* × *polygonifolius* (*P. Seemenii*)—as did both Beeby and Hagström originally—but in *Crit. Res.*, 1916, 178, Hagström places it with some hesitation under *P. polygonifolius*. However, in *Rep. B.E.C.*, 1921, 527, he agrees with Dr Druce that it is not a hybrid and with this opinion we entirely agree.

Var. *amphibius* Fries

Is the most common form and includes all plants growing in shallow water and producing floating leaves smaller than usual and more shortly stalked—the common heath form, *ericetorum* Syme, having floating leaves oblong-oval and averaging about 5 × 2.5 cm. is included here, and nov. forma *parvifolius* Pearsall. Folia natantia parvissima (10-25× 5-15 mm.). Scotland and Ireland.

P. Macvicarii Ar. Benn. in *Ann. Scot. Nat. Hist.*, 1907, 106-108. (*P. polygonifolius* × *praelongus*)

Is reported from Argyllshire, Scotland. It differs from *P. praelongus* in having 3 principal nerves and about 8 (11) secondary: the leaf-base is subpetiolate.

P. coloratus Vahl ex Horneman, *Flora Danica*, 1813, t. 1449. Cham. et Schlecht., *Linnaea*, 1827, ii., 194. Fieber, *Pot. Böhm.*, 1838, 18. *P. plantagineus* Du Croz, ap. Roem. et Schultes, *Syst. Veg.*, iii., 1818, 504. *P. Hornemanni* Meyer ex Koch, *Syn. Fl. Germ.*, ed. i., 1837, 674, and ed. ii., 1844, 777. (Fryer's reference, p. 22, *Pots. Brit. Isles*, of this species to *P. Hornemanni* Meyer, *Chlor. Hanov.*, 1836, 521, is incorrect—see *P. polygonifolius*.)

A plant of stagnant peaty water, rather rare except in the Fens. Stem terete, normally slightly branched but often possessing numerous branches in deep water. Leaves all similar, no clear distinction between floating and submerged leaves, all stalked, thin, pellucid—never coriaceous—elliptical or ovate-lanceolate and sometimes sub-cordate and auricled at the base. The apex is usually obtuse but occasionally slightly cuspidate. The petiole is always short—up to 2 cm.—and in the upper leaves always shorter than the lamina. The lower leaves are frequently lanceolate or falcate and often have a decurrent base and appear subsessile. Phyllodes are absent. The delicate and conspicuous reticulation of the transparent leaves makes this species easy to distinguish. Stipules blunt, with a small mucro, hyaline, subpersistent, scarious when old. Spike long (2.5-4 cm.), cylindrical, densely flowered and fruited. Peduncles slender, gracile, equal, 2 in.-8 in. (5-20 cm.) long. Fruit minute, 1/20th in. (1 mm.), ovate; beak very short often obsolete, subcentral.

No varieties are given in the *L.C.*, nor are any necessary. We have, however, many forms possessing leaves of exceptional size which may conveniently be referred to f. *grandifolius* Hagstr.—leaves 70-80 × 30-45 mm. Among specimens from our herbarium so named by Dr Hagström were several Irish examples—one from Portarlington, July 1896, R. L. Praeger, had leaves 95 × 56 mm.—and others from the Fens with much longer leaves but much less wide. Mr Arthur Bennett (*Journ. Bot.*, 1919, 11) reports Cambridgeshire plants with leaves 150 × 50 mm., on boulder clay.

P. Billupsii Fryer, *Journ. Bot.*, 1893, 353, p.p. (t. 338, non 337). (*P. coloratus* × *gramineus*).

Also fully described in *Pots. Brit. Isles*, 1915, 25-27, plates 16, 17. Of the original *Journ. Bot.* plates Fryer admits that 337 should be excluded—it is probably *P. Zizii* (*angustifolius*)—and those of his later monograph should be preferred. *P. Billupsii* is a very rare Fenland form and no distribution is given in the *L.C.*, 1925. The plant upon which the hybrid was based grew near Parsonware Drove, Benwick, Cambs., and was subsequently cultivated by Fryer and distributed. Dr Druce found a similar form in Wood Walton Fen, Hunts.—*Rep. B.E.C.*, 1922, 630.

P. perpygmaeus Hagstr., *Rep. B.E.C.*, 1922, 630. (*P. coloratus*×*pusillus*). *P. lanceolatus* Smith, var. *hibernicus* Ar. Benn., in Fryer, *Pots. Brit. Isles*, 1915, 63.

In Cahir River, Co. Clare, Ireland, only. See also *Rep. B.E.C.*, 1928, 762.

P. alpinus Balbis emend. Aschers. *Fl. Prov. Brandenburgh*, 1864, 658. *P. rufescens* Schrad. ap. Cham. Adnot. ad Kunth, *Fl. Berol.*, 1815, 5. *P. fluitans* Smith, *Eng. Flor.*, ed. ii., 1828, 231. *P. purpurascens* Seidl. emend. Fieber, *Potam. Böhmens*, 1838, 16. (Both Hagström and Graebner give *P. microstachys* Wolfg. ap. Schultes, *Mant.*, iii., 1827, 359, as synonymous with *P. alpinus* but Fernald shows they are distinct species—*Rhodora*, vol. 32, 87, 76.)

Stem simple below the involucral leaves, slender, terete, with internodes shorter than the leaves, and conspicuous nodes. Floating leaves *obovate with tapering base, blunt apex and petioles shorter than the laminæ*, often tinged with purple or red, coriaceous. Submerged leaves thin, membranous, pellucid, lanceolate, narrowed toward each end, subsessile or shortly stalked, entire, apex always blunt and midrib reticulate. British forms usually possess narrow submerged leaves—under ¾ in. (20 mm.)—but other European forms are sometimes 1⅜ in. (35 mm.) wide. Stipules very large, ovate, hyaline, blunt, robust. Spike cylindrical, abrupt, often densely flowered, usually about one-third the length of the slender, erect, equal peduncle. The fruits, when mature, are of medium size, widest just above the middle, narrowed above subequally to a long submedian beak—the upper part of the fruit having a " bottle-neck " shape. The fruit is a most important character which has been poorly described and figured in British floras. Fryer's figure on the upper part of Pl. 26 (of *P. praelongus*) is quite unlike that of any fruit of *P. alpinus* we have seen. Excellent figures are Butcher and Strudwick, 1930, 383 B, and fig. 17 in Engler, *Pflanzenr.*, iv., 11, 1907, 71.

The *L.C.* list only includes one variety—var. *lacustris* Marsson, which includes all narrow-leaved forms with longer internodes than usual.

To this should be added var. *obscurus* Asch. All leaves submerged, usually to 12 × 1 cm., and with internodes less than 2 cm. long—and var. *Palmeri* Druce (given as a hybrid of *P. alpinus* × *praelongus* in *L.C.*)—see *Rep. B.E.C.*, 1928, 639.

P. VENUSTUS Baagöe in *Comp. rend Cong. de botanique. Paris*, 1900, 517. (*P. alpinus* Balb. × *crispus* L.). Asch. et Graeb. *Syn. Fl. Mitteleur.*, 1913, 515. *P. Baagöei* Ar. Benn. ap. Graebner, *Potamog.*, 1907, 132, nomen.

This is one of the rarest hybrids in the genus, only known elsewhere in Europe from Denmark. It was found by Messrs W. Barclay and J. R. Matthews in the R. Earn, above Dalreoch Bridge, Mid Perth, 13th September 1915. See *Rep. B.E.C.*, 1916, 376, and *Proc. Perth. Soc. N.S.*, vi., pt. iii., 1916, 10. Notwithstanding this distribution through the B.E.C., and Mr Arthur Bennett's long note on "A Hybrid Potamogeton new to Great Britain" (*l.c.*) the name is not included in the 1925 *L.C.* list. We possess five sheets of the original gathering and Dr Hagström has confirmed the name—as above—although at the time of the publication of his *Crit. Res.* he had seen no examples except from Denmark (*l.c.*, 144). The plants differ from *P. crispus* in having leaf-margins non-serrulate, but if the youngest leaves are examined under the microscope the marginal cells occasionally show a slight protuberance in the middle of the outer wall which indicates a faint disposition to form denticles. Other differences from that species are the purplish-red colour of the dried leaves and the absence of marginal undulation. The peduncles and spikes, the branching, and the entire absence of floating leaves are evidences in favour of *P. crispus*. The influence of *P. alpinus* is seen in the nervation, the ligules and the occasionally sloping (and somewhat stalk-like) bases of some of the upper leaves. The leaves are rather uniform in shape, lanceolate tapered at each end, with nearly parallel sides and subacute apex. The ligules are brownish-green (compared with the whitish-green of *P. undulatus* Wolfgang = *P. crispus* × *praelongus*). The average leaf is ± 90 × 9 mm.

P. NERICIUS Hagstr. (*P. alpinus* × *gramineus*). *Crit. Res.*, 1916, 145, non *P. gracilis* Wolfg.

In *Proc. Perth. Soc. Nat. Sci.*, vol. vi., pt. iii., 10, 1916, Mr Arthur Bennett publishes an account of "*P. gracilis* Wolfg. in Perth" and so names plants found by Mr Barclay in Loch Moraig, Perthshire. Hagström (*l.c.*) says that *P. gracilis* Wolfg., and *P. Wolfgangii* Kihlm., have been wrongly referred to this hybrid (*P. nericius*) but are forms of *P.*

gramineus. This is undoubtedly correct in many instances, among which we should certainly include our own herbarium examples of the Perthshire plant, which Dr Hagström named *P. gramineus* f. *Wolfgangii* (Kihlm.) Hagstr. Entirely different are Dr Druce's specimens of this hybrid from the R. Don, at Alford, N. Aberdeen—*Rep. B.E.C.*, 1920, 151. These were found growing with both parents and give clear evidence of each in their intermediate characters.

P. Drucei Fryer, *Pots. Brit. Isles*, 1915, 31. (*P. alpinus* × *natans*) Hagstr., *Crit. Res.*, 1916, 146.

This beautiful plant has at various times been referred to *P. fluitans*, *P. polygonifolius*, *P. alpinus* × *natans*, and *P. alpinus* × *polygonifolius?* See *Journ. Bot.*, 1918, 82; 1899, 524. *Rep. B.E.C.*, 1915, 224; 1919, 713; 1922, 858. *Rep. W.B.E.C.*, 1924-5, 314. In this last-named report Mr Arthur Bennett's long note concludes, "At present I am strongly inclined to call it a species and not a hybrid." This is apparently a pardonable slip of the pen, as in *Journ. Bot.*, May 1925, 149, he wrote, "I do not think we are able to say whether it is a hybrid or a species, with any certainty; though I rather think it may prove the former." In the *Lond. Cat.*, 1925, No. 1947, he shows that this was his considered opinion—a hybrid. At present we have an open mind upon the question and considerable difficulty in regard to the following points. Several of the most constant and distinctive characters of *P. alpinus* which we should expect to make their influence felt in the hybrid are either absent or insufficiently evident in *P. Drucei*. Among these characters are (1) the blunt apex of the leaves, (2) the absence of long (or any) petiole, (3) the pronounced colour, and (4) the "bottle-neck" fruits, of *P. alpinus*. On the other hand, *P. Drucei* possesses a closely intricate and beautiful transverse venation quite unlike that of any other British species, and leaves which show a uniformity of shape, a subequal tapering of each end and a general symmetry of form which are quite uncommon.

Stem short, stout, simple and round. Internodes much shorter than the petioles. Floating leaves coriaceous, long-stalked, oblong-elliptical or ovate with a short mucro. Submerged leaves broadly lanceolate or elliptic-lanceolate, narrowed at each end. Almost invariably ± shortly cuspidate and long-stalked. All leaves are remarkably uniform in shape, varying chiefly at the base, and possess a conspicuous and delicate transverse venation which combines to make them more beautiful than those of any other British species of the genus. Stipules long, 3 in.-4 in., hyaline, lanceolate, herbaceous. Spike cylindrical, flowers many but not crowded, opening freely but usually abortive. Peduncles long and equal. Fruit rarely mature, large, roughly obovoid or nearly elliptical in general outline, dorsal margin nearly semicircular and acutely keeled, beak stout. A very rare species found only in three rivers of the south of England.

In *Journ. Bot.*, 1925, 149, Bennett suggests that the name *P. Drucei* should give way to that of *P. petiolatus* Wolfgang, as Dr Druce's plant agrees with Lithuanian specimens of *P. petiolatus* which he possesses. Hagström (*l.c.*, 189) has examined Wolfgang's examples from both Lithuania and Volhynia and refers them to *P. nodosus* Poiret.

P. SPATHULATUS Schrader ap. Koch et Ziz., *Catalogus plant. Palat.*, 1814, 5, 18. (*P. alpinus* × *polygonifolius*) Asch. et Graeb.

Upper leaves long-stalked, often longer than the laminæ with their tapering bases and blunt apexes. Channel Islands only. See *Rep B.E.C.*, 1922, 621.

P. LANCEOLATUS Smith, *Eng. Bot.*, 1809, t. 1985. *Eng. Fl.*, i., 1824, 232 as species. (*P. alpinus* × *pusillus*) ex Hagstr. *Crit. Res.*, 1916, 149. *P. rivularis* Gillot, in Magnin, *Scrin.*, vi., 1887, 118, and in *Bull. Soc. Dauph.*, 1887, 584.

Good descriptions and figures of *P. lanceolatus* are to be found in *Journ. Bot.*, 1881, 65, t. 217, and *Pots. Brit. Isles*, 1915, 63, t. 39. Fryer was the first writer to suggest hybridity for this species and also the first to recognise its resemblance to *P. rivularis.* Mr Arthur Bennett—*Journ. Bot.*, 1919, 12—does not concur in *P. alpinus* being one of the parent species but considers that *P. heterophyllus* × *pusillus* is more probable. He makes one legitimate point in his criticism of Hagström's opinion—as quoted above—and that is, that the leaves are not " obtuse " but " sub-acute." He refers to this twice and apparently regards " the obtuse apices of the submerged leaves " as the only reason for Hagström's rejection of *P. gramineus* (*heterophyllus*). This is, however, by no means the case. Hagström (*l.c.*, 150) gives ten objections to the name *gramineus*, only two of which need be mentioned here—the smooth margins of the submerged leaves, and their peculiar nervation. These characters together, are amply sufficient for the rejection suggested; quite apart from the others.

Stem very slender and filiform, branched from the base. Floating leaves (when present) small, elliptic-lanceolate, with nearly parallel sides, shortly stalked, blunt or subacute. Submerged leaves long, linear-lanceolate, tapered at each end but much more gradually below, sessile, with apex obtuse or—more usually—subacute. Stipules short, almost subulate, scarious. Peduncles equal, often curved, ¾ in.-1½ in. (2-4 cm.) long, round and usually stouter than the slender stem. Spike very short, ⅙ in.-¼ in. (4-6 mm.), oval. Fruit abortive. Anglesey and Cambridge only—not Clare, Galway (see *P. perpygmaeus*).

P. GRAMINEUS L., *Sp. Pl.*, 1753, 127. *P. gramineus* var. *heterophyllus* Fries, *Novit. Flor. Succ.*, 1828, 37. *P. heterophyllus* Schreber, *Spicilegium Fl. Lips.*, 1771, 21. *P. Proteus heterophyllus* Cham. et Schl., *Linnaea*, 1827, 202. *P. gracilis* Wolfg. ap. Schultes, *Mantissa*, iii., 1827, 355: ex Kihlman, *Bot. Not.*, 1887, 84 = *P. Wolfgangii* Kihlman, *Herb. Mus. Fenn.*, 1889, 128. *P. nigrescens* Fries, *Mantissa*, iii., 1842, 17. *P. varians* Morong ap. Fryer, *Journ. Bot.*, 1889, 33, p.p.

Stem slender, flexuous, much and repeatedly branched at the base forming there a dense mass of submerged vegetation: the upper part is often simple with long internodes till it reaches the surface where it produces short flowering branches with or without coriaceous floating leaves. All leaves are extremely variable—see varieties and forms. Many authors classify into forms with or without floating leaves, but every form does at times produce a few of these, of variable shape. The most common form is elliptical-oblong (or lanceolate) narrowed at each end and usually shorter than the petiole which is often very long (8 cm.). Submerged leaves normally *linear-lanceolate*, *sessile*, *with tapered narrow base*, *serrulate margins*, *sharp apex*, and the two main lateral nerves gradually bending out toward the apex before joining the midrib. (In *P. lanceolatus* they bend suddenly, with a sharp curve, into the midrib.) The minutely denticulate margin of the apiculate submerged leaves is a most valuable character and is shared by all the varieties and forms. The length of these leaves varies from 1 in.-7 in. (2.5-17.5 cm.) and their width from ⅛ in.-1 3/16ths in. (3-30 mm.). Stipules broadly lanceolate, acute with a small mucro, only blunt when this decays; small, usually about half the length of the internodes but longer in the upper branches. Spikes densely flowered and fruited, normally 1 in.-2 in. (2.5-5 cm.). Peduncles stout, swollen upward, especially when the fruit is ripe, normally 5-8 cm., but exceptionally 10-25 cm. (f. *longipedunculata*). Lake district forms are frequently 6½ in., 7¼ in., 8½ in., and occasionally 8¾ in. long. Fruit small, flattened, ovate, dorsal margin with prominent thick (or acute) keel, beak short.

When we come to consider the classification of the very numerous forms assumed by this species we are faced with considerable difficulty. Fries originally (*l.c.*, 1828) divided *P. gramineus* into two proles (=races or sub-species) *graminifolius* and *heterophyllus*. With the latter we are not now concerned, but *graminifolius* has been subsequently very differently conceived by various authors—as a species, proles, variety or forma. Not only its status but its distinctive characters have been variously described and the result is much confusion. All authorities are agreed, however, that it is a form of *P. gramineus* and it should therefore remain as a variety (*L.C.*, 1949 c.).

Var. *graminifolius* (Fries).

The distinctive characters of this variety appear to be (a) stems much elongated and less branched—sparingly, compared with the dense mass of submerged vegetation in the type—(b) very long submerged leaves, linear-lanceolate, otherwise with the characters of the type. Some authors (Graebner) give " all leaves submersed," which although frequently the case is not invariably so; others give " entire, not serrate nor denticulate " (Fryer), or " entire, not apiculate " (Bab.)—to distinguish this " species " from *P. heterophyllus*. Plants labelled *graminifolius* which do, indeed, possess smooth margins to their leaves, are not forms of *P. gramineus* but of some other species.

The two varieties of Fries—*fluvialis* and *lacustris*—most conveniently include the two well-marked series of British forms, long-leaved and short-leaved respectively. Under each variety continental authors place a number of forms several of which are well represented in Britain.

Var. *fluvialis* Fries.

Long submerged leaves 2 in.-6 in. (5-15 cm.) and usually lacking floating leaves. This includes three width forms—f. *angustifolius* Tis. 4-5 mm., f. *Wolfgangii* (Kihlm.) Hagstr. 7-10 mm., and f. *septentrionalis* (Tis.) Hagstr. 10-15 mm. or more, (var. *maximus* Ar. Benn.). The f. *nigrescens* (Fries) Hagstr. (= *P. nigrescens* Fries, *Mantissa*, iii., 1842, 17) is a somewhat common British form of this variety. It usually possesses floating leaves rounded or slightly tapering below and rather large submerged leaves about 6-8 cm. long and 7-8 mm. wide (the type specimen is 6 cm. × 7 mm.), normally " blackening " when dried. The plant is usually rather robust and well branched. Many of Fryer's *P. varians* belong to this form.

Var. *lacustris* Fries

Includes all forms with shorter submerged leaves—not often over 2 in. (50 mm.) in length, and narrower—sometimes very short and narrow (25 × 3 mm. or less).

A rather more extended description of f. *Wolfgangii* appears to be indicated. The correct citation—*P. gramineus* L. var. *fluvialis* Fries, f. *Wolfgangii* (Kihlm.) Hagstr.—may often be required for British forms as many of our *graminifolius* specimens were so labelled by the late Dr Hagström. Among these were good sheets from R. Suck, Co. Roscommon, Ireland, 26th July 1881. H. L. Levinge. These were sent to us by Mr Arthur Bennett and by him referred to var. *graminifolius* (Fries). Among a fine series of Swedish examples kindly given us by Dr Hagström are three sheets of f. *Wolfgangii* which clearly demonstrate the fact that—within their common range of size—*graminifolius* and *Wolfgangii* are synonymous terms. The dimensions given in *Crit. Res.*, 206, for the latter—70-110 × 7-10 mm.—are those of the most commonly seen forms, but exceptionally fine examples may be larger; the R. Suck plants have submerged leaves 65-125×8 mm. and the Swedish examples possess some leaves 162 × 9 mm., narrowed at each end with the apex very longly acuminate and sharp. The internodes below the primary spike are often 8 in. (20 cm.) long. The plants are relatively little branched and only show floating leaves late in the season.

The var. *hibernicus* Ar. Benn. (*L.C.*, 1925, 1949 d.) is apparently a nomen solum and should have been included under 1948—*lanceolatus*—see *P. perpygmaeus*. It should, therefore, be deleted.

P. SPARGANIFOLIUS Laestadius ap. Fries, *Nov. Mantissa*, i., 1832, 9. Bab. *Man. Brit. Bot.*, 1922, 438. (*P. gramineus* × *natans*) Almquist in *Bot. Notis.*, 1891, 127. *P. Kirkii* Syme ap. Fryer, *Pots. Brit. Isles*, 1915, 16. *P. Tiselii* Richter, *Plantæ Eur.* i., 1890, 13 (nomen solum). *P. dubius* Tiselius *Pot. suec. exs.* i., 1894, No. 19.

Dr Hagström contends that as the name *P. nitens* Weber is used to include all forms of the hybrid *P. gramineus* × *perfoliatus*, so that of

P. sparganifolius should be applied to all forms of the hybrid *P. gramineus* × *natans*.

A rare form reported from three English and two Irish counties. "Babington considered that the Irish *P. Kirkii* absolutely agreed with Laestadius' plant: Syme, Fryer and Bennett dissented" (*Journ. Bot.*, 1919, 11). Some Swedish examples sent by Dr Hagström are very different from ours, the hybrid varying greatly; some forms being near *P. gramineus* and others more resembling *P. natans*. Of our own examples submitted to him Dr Hagström referred to *P. sparganifolius* Laest. those from R. Maam, Galway, September 1906, G. C. Druce, and others from L. Corrib, Galway, September 1858, M. Norman.

The stem is long, terete, usually bare below and branched above. Floating leaves narrowly lanceolate, occasionally elliptical, very long stalked with petioles normally longer than the laminæ, the base usually sloping but in leaves of elliptical shape rounded or subcordate, the apex short, ± obtuse and often mucronate. Spike densely flowered, about ¾ in. (2 cm.), but flowers barren. Peduncles 3 in.-4 in. (7.5-10 cm.), equal and slender. The submerged leaves are often extremely long and very narrow, sessile, tapered at each end, gradually below but more abruptly to the acute apex, *entire*. (Both *P. sparganifolius* and *P. sterilis*, which it much resembles, have smooth margins to their submerged leaves).

P. SEEMENII Asch. et Graebner, *Syn. Mitteleur. Fl.* i., 1897, 335. (*P. gramineus* × *polygonifolius*), var. *lanceolatifolius* (Tis.) Hagstr., *Crit. Res.*, 231.

No English records are here given, but the *L.C.*, 1925, ed. 11, p. 46, gives Channel Islands only. *In Rep. B.E.C.*, 1922, 631, Dr Druce records the finding of this hybrid in Ireland and its determination as above by Dr Hagström.

*P. NUTTALII Cham. et Schlecht. in *Linnæa*, 1827, 226. *P. pennsylvanicus* Willd. ap. Cham. et Schlecht., *l.c.*, 227. *P. Claytonii* Tuckerman, *Amer. Journ. Sci.*, ser. i., vol. xlv., 1843, 38, non *P. epihydrus* Raf.

An American alien in Britain: canal at Salterhebble Bridge, near Halifax. See *Pots. Brit. Isles*, 1915, 90. *Rep. B.E.C.*, 1926, 37; 1930, 256.

P. NITENS Weber, *Fl. Holsat. Suppl.*, 1787, 11. (*P. gramineus*×*perfoliatus*) S. Almquist in Hartm. *Handbk. Skand. Fl.*, 1889, 49. *P. salicifolius* Wolfgang in Schultes, *Mantissa*, iii., 1827, 355. *P. falcatus* Fryer, *Journ. Bot.*, 1889, 65, t. 286, and *Pots. Brit. Isles*, 1915, 68. *P. salignus* Fryer, *Vict. C. Hist. Devon*, i., 1906, 129.

An extremely variable hybrid, and as most of its forms in this country greatly resemble those of *P. gramineus*, the hybrid is commonly confused with that species. As this wide-spread confusion is largely helped by the vagueness or inaccuracy of many published descriptions it may be well to refer to some of them. Most authors agree that *P. nitens* possesses the habit of *P. gramineus* but do not stress the point that it is much less profusely branched at the base. Fryer gives "Habit of *P. heterophyllus* but usually differs in the absence of floating leaves." Hooker, "Leaves usually all submerged." Floating leaves are frequently present, especially in still water, and as they afford the very best character for determination of the variety or form, they should be carefully sought. Bab. gives for these floating leaves, "coriaceous, elliptic, stalked." They are usually coriaceous, long-stalked, short-stalked, or sessile—often stalked and sessile on the same plant. If *gramineus* has exercised the greater influence the petioles of the hybrid grow longer; if *perfoliatus*, the floating leaves become sessile and semi-amplexicaul. Most commonly the lamina of the floating leaves is gradually narrowed below, but is sometimes rounded at the base.

The submerged leaves are all similar, sessile, narrowly or broadly lanceolate, gradually tapered above, *rounded-cordate and semi-amplexicaul* at the base. In exceptional cases the stem leaves are not rounded-cordate but lanceolate at the base, but in all such cases the branch leaves have ± rounded bases. The apex is normally cuspidate and *the margins show minute and often fugacious denticles.* The length varies up to 4¾ in. or even 6 in. (12-15 cm.), and the width from ¼ in.-¾ in. (6-20 mm.) or more. Stipules lanceolate, hyaline, variable in length. Spikes with rather few flowers, for the greater part quite sterile. The peduncles are important from the fact that the involucral leaves at their bases are an invaluable character and the basis of Hagström's classification. As to the peduncles the evidence is somewhat meagre or conflicting. Fryer's "short and stout" requires some modification and we have previously (*Journ. Bot.*, 1923, 6) called attention to Lake District specimens which are "long and slender." Taking only the European distribution of *P. nitens*, we find that its peduncles vary greatly in both length and thickness. In specimens from Denmark they are very slender and about 5 in. long. Our English Lake District examples are often 6 in. in length and slender.

Mr R. W. Butcher describes British specimens as "very long, terete, swollen at the top." This agrees with our own experience—the peduncles are more often long than short: they vary considerably in thickness and are usually thickened at or above the middle. They are normally shorter than those of *P. gramineus* from the same area but rarely as short as some extreme German forms (2 in.-2½ in.), or as long as exceptional Swedish examples (8 in. and 9 in.). Neither Mr Arthur Bennett (*in litt.*) nor ourselves have yet seen mature fruits from British plants.

For the classification of the very numerous and widely-differing forms of *P. nitens* it is desirable that some common basis should be adopted. No better classification exists than that of Hagström, and we suggest that as each of his varieties is well represented in Britain it should replace that of the *L.C.*

Var. *subgramineus* (Raunkiær) Hagstr.

Involucral leaves narrowed to the base and always distinctly petiolate—often with long petioles. This variety includes many " forms," of which two only need be given at this stage, f. *involutus* (Fryer) Hagstr.—see ×*P. involutus* Fryer, *Pots. Brit. Isles*, 1915, 69—and f. *subovalis* Hagstr., submerged leaves with sub-cordate oval bases, length 45-60 by 10-11 mm. wide. This variety shows the influence of *P. gramineus* more than either of the two following varieties.

Var. *subperfoliatus* (Raunkiær) Hagstr. (not *subpetiolatus* as in *L.C.*, 1952 c.).

Involucral leaves cordate-based and sessile. This variety shows the influence of *P. perfoliatus* predominantly in the involucral leaves which are sessile and often semi-amplexicaul. Several British forms are included under it, of which only two need mention here, f. *praelongifolius* (Tis.) Hagstr. Stem very long and sparsely branched; submerged leaves very large (up to 15×2 cm. or more) with broad rounded cordate semi-amplexicaul bases; and long peduncles. Under this name would come the following British forms:—*P. salicifolius* Wolfg. in Schultes (*l.c.*). *P. salignus* Fryer (*l.c.*), and *P. decipiens* var. *salicifolius* Ar. Benn., *Lond. Cat.*, 1925, 1954 d. Each of these is a form of the hybrid *P. gramineus* × *perfoliatus*, but *P. salicifolius* Wolfg. ex Fries (*Summa veg. Scand.*, i., 1846, 213) and ex Hartman (*Handb. Skand. Fl.*, 1879, 432) were forms of *P. praelongus*. The other British form of this variety is f. *perfoliatifolius* (Tis.) Hagstr. which includes *P. nitens* var. *maximus* Ar. Benn., *Journ. Bot.*, 1907, 173 (not to be confused with *P. heterophyllus* var. *maximus* Ar. Benn., *Lond. Cat.*, 1949 b), and f. *latifolius* Tis. in Graebner, *Potam.*, 1907, 90. Stem leaves 6-7 × 2 cm. or more.

Var. *subintermedius* Hagstr.

Involucral leaves lanceolate-based, shortly stalked or sessile—occasionally one is rounded at the base. This variety is intermediate in its characters and rather more variable than the other two. It includes, as they do, a large number of forms several of which are British. To f. *typicus* (Tis.) Hagstr. most of our herbarium examples of Fryer's *P. falcatus* were referred by Dr Hagström. This form has submerged leaves, 35-50 × 9-10 mm., with ovate or subcordate bases, and margins showing microscopic denticles—not " entire " (auct. angl.). Under this form, too, were placed British examples of var. *curvifolius* Hartm. There is really no valid reason for the retention of this name as recurved submerged leaves may be seen in most forms of the hybrid. f. *maelarensis* Tis. has lanceolate submerged leaves with bases very narrowly sub-ovate and only by their examination under the lens while fresh—or, better still, by carefully detaching a few, pressing their bases flat on a piece of stamp selvage subsequently kept pressed by an elastic band between two small pieces of blotting paper in one's note-book—can they be distinguished from those of *P. gramineus*. Dr Hagström named our examples from Derwentwater as f. *maelarensis*. In all forms of *P. nitens* it very frequently happens that in drying, the bases of the submerged leaves become folded and then appear to be narrowly lanceolate, tapering with nearly straight sides—apparently *P. gramineus*!

P. LUCENS L., *Sp. Pl.*, 1753, 126. *P. acuminatus* Schum., *En. Pl. Sæll.*, 1801, 49. *P. longifolius* Gay in Lamarck, *Enc. mét. Bot.* iv., 1816, 535. *P. cornutus* Presl, *Fl. Cechica*, 1819, 37. *P. Proteus lucens* Cham. et Schl., *Linnæa*, 1827, 197.

The largest British species of the genus, with very stout stem often over 10 ft. (3 m.) long, thick and tough. It never produces coriaceous floating leaves and has a tendency to reduce the size of the lamina of the stem leaves—especially at its base—to little more than the midrib portion.

All leaves submerged, translucent, frequently shining, oblong-lanceolate as a rule, but very variable. The leaves are always shortly stalked but apparently subsessile owing to the decurrent lamina. The margins are finely serrulate and the apex usually with a long cusp, or acuminate and mucronate. Normally the leaves possess 11-13 nerves and the spaces between the transverse veins are usually narrow—in longitudinal direction. The leaves are longer and broader than those of *P. angustifolius*. British examples of *P. lucens* are generally 5 in.-8 in. × 1½ in.-2 in.—the largest we have seen were 8 in. × 2⅜ in. (20 × 6 cm.). Stipules very large, long, obtuse and with two prominent keels on the back. They are often 5-8 cm. long. Spike stout, long, dense and cylindrical. Peduncles variable in length, stout and thickened upward. The fruit is large and swollen, roundish, scarcely keeled and with a short beak. The most common British forms are var. *acuminatus* (Schum.) Fries, in which the midrib projects to form a long prominent point to the lamina (often much reduced) which frequently has ± involute margins above.

Var. *longifolius* DC. (*P. macrophyllus* Wolfg.) non *P. longifolius* Bab.

Very long and narrow leaves, 8 in.-13¾ in. × ⅞ in.-¾ in. or more (20-35 × 1.5-2 cm.), with short stalks and weaker serrulation. The stem-leaves are very gradually tapered above and below, but the branch-leaves are rather suddenly narrowed at the apex and cuspidate: their stalks and stipules are also shorter.

Var. *insignis* Tis.

Is possibly our most common form, with long lanceolate leaves as described under the type. *P. lucens* produces very robust plants in calcareous waters and the leaves are there frequently encrusted with lime.

P. STERILIS Hagström, *Crit. Res.*, 1916, 238. (*P. lucens* × *natans*). *P. fluitans* Roth ex Beeby in *Journ. Bot.*, 1890, 204. *P. fluitans* Auctt. ex Raunkiær *Danske Blomsterpl.*, i., 1896, 97.

The name *fluitans* should be abandoned as confusing; it has been used in Europe for at least two distinct forms—under *P. fluitans* Roth —it was used in this country (*P. fluitans* Smith) for *P. alpinus*; in America for *P. Nuttallii* and in one European country for the hybrid *P. gramineus* × *natans*.

A rare hybrid recorded for four English counties and one in Ireland; often difficult to distinguish from *P. sparganifolius* Laest. The floating leaves are most often elliptic-lanceolate, narrowed at each end of the lamina and with the apex distinctly and acutely cuspidate. The petioles are normally shorter than the lamina. The submerged leaves are narrowly lanceolate as a rule, with the lamina imperceptibly tapering into the long petiole, forming a very long and narrow leaf, persistent and entire. This hybrid varies considerably, resembling one or other of its putative parents upon occasion. Most frequently it is a tall, robust and well-branched plant showing many floating leaves, but occasionally it is nearly simple, with few floating leaves. In every case all leaves are stalked and the fruits sterile. Some of Fryer's plants distributed as *P. crassifolius* are this hybrid.

P. Babingtonii Ar. Benn., *Journ. Bot.*, 1894, 204-205. (*P. lucens* × *praelongus*) ex Caspary. *P. longifolius* Bab. non Gay. *P. Babingtonii* f. *longifolius* (Bab.) Hagstr.

A plant found in Lough Corrib, Ireland (figured in *Eng. Bot. Suppl.*, 1840, t. 2847), was named by Babington *P. longifolius*. So far as we are aware this is the only record.

P. decipiens Nolte, in Koch, *Syn. Fl. Germ. et Helv.*, 1844, 779. (*P. lucens* × *perfoliatus*) ex Marsson, *Fl. Neuvorp. Rüg.*, 1869, 491. *P. lithuanicus* Gorski in Reich., *Icones*, vii., 1845, t. 31. *P. lucens* sub-sp. *decipiens* Nolte in Hooker, *Stud. Fl.*, 1884, 433.

Ascherson and Graebner (in Engler, *Pflanz.*, iv., 11, 1907) include two hybrids under this name—*P. lucens* × *perfoliatus* Marsson and *P. lucens* × *praelongus* Caspary—and their classification of the numerous varieties and forms under each hybrid is extremely complicated and often inaccurate. So far as their treatment of British species of *Potamogeton* is concerned we entirely endorse the judgment of the late Mr Arthur Bennett (*Journ. Bot.*, 1917, 348), "the involved nomenclature of the Synopsis is difficult to quote unless at great length, and the opinion of the authors (to me *in litt.*) is so variable that I place no dependence on their naming." Mr Fryer always maintained that the original *P. decipiens* of Nolte was the hybrid *P. lucens* × *perfoliatus*, and it is therefore rather surprising that his description (*Pots. Brit. Isles*, 1915, 75) contains no reference to the essential minute denticulations of the leaf margins. Koch (*l.c.*) gives "*margine laevibus*," and Babington (*Man.*, 1922, 440) "at the end entire"—notwithstanding the fact that Nolte's own specimens and those of Fryer show these denticulations distinctly. It is well to remember that neither of the parent species possesses leaves with entire margins and neither produces coriaceous floating leaves. As a result, no plant with entire leaf margins, or producing floating leaves can be referred to *P. decipiens*. As in the case of most hybrids, authenticated examples of *P. decipiens* vary considerably toward one or other of the parent species. The contention of Dr Hagström that this name should be used for all hybrids of *P. lucens* ×

perfoliatus seems to us extremely sound. In this country we have tacitly agreed to the name *P. nitens* for the much greater number of forms of the hybrid *P. gramineus* × *perfoliatus* and therefore we propose to adopt the name *P. decipiens* (as suggested) in our present classification.

Stem stout, round, usually simple below and only slightly branched above. The branches ultimately reach the surface of the water and spread out with their very divergent branchlets. Leaves all submerged, oblong, rounded below, sessile, usually ± rounded-obtuse at the apex but occasionally narrowed and apiculate, never hooded but often wavy at the end. The marginal serrulations or denticulations of the parent species respectively, affect the hybrid to the extent that its leaf margins show small and easily abraded denticles. These are often absent in the older leaves but can invariably be seen distinctly in the youngest and not fully developed leaves. Babington's distinction between *P. angustifolius* "minutely denticulate near the end," and *P. decipiens* "at the end entire," has been responsible for much confusion of names—under the microscope both species show these denticulations irregularly disposed right down the margin, although sometimes more numerous above.

Stipules long, stout and blunt, persistent—the lower often bearing a sessile leaf, or leaf-like tip. Peduncles are often slightly thickened above, not invariably equal (auct. angl.). Spike 1 in.-2 in., dense, barren. The fruit sometimes resembles that of one parent species, sometimes the other, but is usually smaller and always abortive.

British forms we have examined are included in the following varieties:—

Var. *brevifolius* Hagstr.

Leaves less than an inch wide and very rarely over 4 in. (10 cm.) long. Most examples come under f. *pulchellus* Tis. of this variety (65-75 × 15-20 mm.), but many of Fryer's Mepal, Cambridge specimens we refer to f. *lithuanicus* (Gorski) Hagstr., with relatively longer and narrower leaves.

Var. *longifolius* Hagstr.

Leaves much longer—often very long—and rather narrow (15-20 × 2 cm.), the upper stem-leaves with rounded bases. Under this variety is placed *P upsaliensis* Tis. as f. *upsaliensis* (Tis.) Hagstr. Dr Druce's specimens from Bindon, Dorset (*Rep. B.E.C.*, 1917, 252), and Miss Roper's from Wool, Dorset (*Journ. Bot.*, 1917, 348) are excellent examples of this form.

Var. *latifolius* Hagstr.

Possesses much broader leaves than the two preceding varieties—2-4 cm. in width. Few British plants can be placed here, but most of Nolte's own examples from Germany would come under f. *typicus* Tis. of this variety, and here also we should refer var. *affinis* Ar. Benn.—see *Journ. Bot.*, 1879, 289; 1882, 184; 1919, 14. Swedish forms distributed by Dr G. Tiselius in his *Potamog. Suec. exs.*, ii., 1895, under No. 70 (f. *typicus*) vary from 7.5-12 × 2-3 cm. (*P. decipiens* var. *salicifolius* Ar. Benn. (*Lond. Cat.*, 1925, 1954 d.) is a form of *P. nitens.*)

P. ANGUSTIFOLIUS Bercht. et Presl, *Rostlin.*, ii., 1821, 19. *P. Zizii* Mert. et Koch, *Deutschl. Fl.*, i., 1823, 845 (*nomen solum*). (*P. gramineus* × *lucens*) ex Hagström, *l.c.*, 210. *P. Zizii* Roth.

Stem stout, long, terete, much branched below. Leaves usually ± alike, but occasionally floating leaves are produced, oblong and tapering at both ends, more distinctly stalked than the lower leaves, uppermost may even be long-stalked but never longer than the lamina. Submerged leaves lanceolate or shortly oblong, rather narrow in proportion to their length, narrowed toward the base, sessile or shortly stalked. There are 2 distinct forms, one with the apex gradually tapering to an acute and cuspidate point; the other with the apex abruptly rounded and mucronate. The margins are undulate, irregularly and minutely denticulate along their whole length—not merely " near the end " or " toward the tip." British examples are rarely over 6 in. in length or 1 in. in width (cf. *P. lucens*).

Stipules long (1.5-4 cm.), broad, blunt, doubly keeled on the back. Spikes dense, cylindrical, 1½ in.-2½ in. (4-6.5 cm.) with numerous flowers. Peduncles stout, thickened above, usually longer than their basal leaves, often in clusters. They vary greatly in length, most often between 3 in-5 in. (7.5-12.5 cm.) but Derwentwater examples (*teste* J. O. H.) are often 18 cm. long. The fruit is small in relation to the size of the plant, laterally compressed, ventral margin nearly straight with a short beak at its upper continuation, dorsal margin with the normal nearly semicircular curve and a prominent keel and lateral ridges. In *Journ. Bot.*, 1923, 5, we stated, " Dr Hagström (*l.c.*, 212) remarks that ' its fruiting-faculty appears in some cases nearly quite undiminished or normal, in most cases considerably reduced and in many quite lacking.' While this accords with our own experience of this species, we may add that the fruiting-capacity seems to depend very largely upon the light-intensity and the rate of carbohydrate synthesis. If this is high, abundant fruits appear, and in our judgment this is usual among the larger-leaved species of Potamogeton." In the English lakes this species is at present found only in Derwentwater and Coniston. In the former it grows in about 1 m. of water and the leaves have a reddish colour owing to the presence of anthocyanin. These specimens fruit freely, and both these distinctive characters can probably be attributed to high light-intensity (± 35%) and a consequent high rate of carbon assimilation. The Coniston specimens—growing in water about 3 m. in depth (L. I. ± 10%)—lack both the colouring and the fruiting of the Derwentwater plants. " In hundreds of yards of Fen ditches in Cambridgeshire there is no lack of fruiting—rarely are there any plants without fruit and the fruit is well-formed " (A. B., *in litt.*). We cannot accept Dr Hagström's further statement (*l.c.*), " I am persuaded that *P. Zizii* rarely, if ever, propagates itself by seeds "—at any rate so far as the Derwentwater plants are concerned. They have been flourishing in the same place for over 20 years at least, in spite of the fact that they grow in relatively shallow water and are subject all the summer to disturbance and breakage through boating.

In regard to classification we suggest that the present var. *lacustris* of the 1925 *Lond. Cat.* list be dropped and Fieber's two varieties—*validus* and *elongatus*—be substituted, as both are well represented in Britain and cover all forms likely to be seen. In *Journ. Bot.*, 1919, 14, the late Mr Arthur Bennett says, "Of the Cambridge Fens forms a large number fall under var. *validus* Fieb., f. *coriaceus* M. et K. (*P. coriaceus* Fryer); our usual form is *lucescens* Tis.; f. *communis* Hagstr. occurs in Llyn Leydyard (Griffiths); f. *lucentiformis* Hagstr., Westmoor. Cambs (Fryer); var. *elongatus* f. *foliosus* occurs in Coniston Lake, N. Lancs (C. Bailey)." To these I may add that there are two varieties in Coniston Lake, the one just quoted and also var. *validus* Fieb. f. *lucescens* (Tis.) Hagstr. In Derwentwater var. *elongatus* (Fieb.) f. *pulcherrimus* Hagstr. is quite frequent, and we sent both Mr A. Bennett and Dr Hagström several sheets of good fruiting specimens of this. It is, therefore, rather remarkable that no reference to any of the varieties and forms mentioned in the foregoing list—all of which Mr Bennett saw and acknowledged in print—is to be found in his 1925 *L.C.* list. The classification we suggest is based upon the length of the internodes—especially the upper ones, which are more constant.

Var. *validus* Fieber, *Potam. Böhm.*, 1838, 26.

All internodes—or at least the three below the primary spike shorter, 3-6 cm. or less. Under this variety are five forms, three of which are given in the foregoing *Journ. Bot.* list.

Var. *elongatus* (Fieber) Reichenb. *Icones*, vii., 1845, 24, t. 39, f. 68.

All internodes elongate—10 cm. or more. Peduncles also elongate—in British examples up to 20 cm. Under this are three forms, two of which—f. *foliosus* and f. *pulcherrimus*—are British.

P. crassifolius Fryer, *Journ. Bot.*, 1890, 321 : *Pots. Brit. Isles*, 1915, 8.
? (*P. natans* × *Zizii*) Aschers. et Graeb. *Synop.*, 1897, 332.

Fryer says that *P. crassifolius* never occurs in the Fens apart from *P. natans* and *P. Zizii*. He therefore gives this as an added reason for his conclusion that *P. crassifolius* is a hybrid of the two species near which it grew. This may be so, but we believe it is quite impossible to demonstrate it. *P. Zizii* (*angustifolius*) is very frequently a fertile hybrid which may, on occasion, function as a species and produce with *P. natans* a ± unstable hybrid, but we doubt very much whether this would, in nature, survive the first winter. In another aquatic genus—*Batrachium*—we have occasionally found most interesting intermediates growing with two well-established species. We have collected an example and circulated it among a few authorities who agreed that it justified the assumption of hybridity, but diligent search the following season failed to discover a single specimen of the supposed hybrid in its original habitat. It is conceivable that the hybrid *P. crassifolius* might have similarly disappeared had it not been cultivated. Hagström (*l.c.*, 216) thinks that some of Fryer's examples "seem to be this double hybrid," but others are *P. lucens* × *natans* (*P. sterilis*). We agree with the latter, but not with the former conclusion. We have hitherto failed to find sufficient evidence of *P. gramineus* in the hybrid *P. crassifolius*.

The plant is only known from a restricted area in Cambridgeshire and a detailed description is given in *Pots. Brit. Isles*, 8-11, plates 4 and 5. Until recent examples, showing indubitable evidence of *P. gramineus*, can be produced, the name *P. crassifolius* should not be used.

P. NERVIGER Wolfg. ap. Schultes, *Mantissa*, iii., 1827, 359. (*P. alpinus*× *praelongus*) Aschers. et Graebn. Syn., i., 1897, 317. *P. Griffithii* Ar. Benn., *Journ. Bot.*, 1883, 65. See also Hagström (*l.c.*), 149; *Rep. B.E.C.*, 1884, 114; 1925, 787; 1926, 36, and 1928, 639; Fryer, *Pots. Brit. Isles*, 1915, 34.

Only known from one Welsh lake—Llyn-an-afon—near Aber, Carnarvon, N. Wales. Mr Bennett maintained to the end that this plant is a species and not a hybrid, although Dr Hagström says of it, "Its hybrid origin, however, is beyond all doubt, and may now-a-days be disputed in earnest by nobody." We agree that the evidence for hybridity is conclusive. Mr Bennett's contention that "*Griffithii* is an isolation species like *Salmo nigropinnis* (the black-finned Trout) of these isolated Welsh Lakes. They are found nowhere else in the world," will not bear examination. The ease and rapidity with which wild duck, waders and other birds transport aquatic plants renders "isolation" impossible. We are told (*Rep. B.E.C.*, 1928, 640) that this species grows in water 7 feet or more deep. This is a suitable depth for both *alpinus* and *praelongus*, and in its previous history the lake probably contained both these species—at some stage of its development. In our opinion it is probable that *P. Griffithii* is vestigial—both parents having disappeared. For full description and plate see Fryer (*l.c.*).

P. PRAELONGUS Wulfen in Roemer, *Archiv.*, 1805, 331. *P. perfoliatus* var. *lacustris* Wallman, in S. Liljeblad *Utkast till en Sv. flora*, 1816, 706. *P. salicifolius* Wolfg. ex Fries (1846) et ex Hartman (1879) non Schultes, *Mantissa*, iii., 1827, 355 (see *P. nitens*).

Stem stout, long (often 20 ft. = 6 m.), flexuous, branched above, light in colour. Leaves all similar, sessile, pellucid, rounded at the base, oblong, usually very gradually narrowed from base to apex, blunt, distinctly and constantly hooded at the tip. The midrib has a broad border of conspicuous elongate reticulations, the margins are slightly undulate and smooth—those of *P. lucens* are serrulate. This species does not vary with us as in other European countries. Our commonest form possesses leaves 6 in. × 1 in. (150 × 25 mm.) with a length/breadth ratio (L./B.) of 6.0. Most Windermere examples have this size. Those from Esthwaite Water are more often 4 in. × ⅞ in. (100 × 23 mm.), L./B. 4.3. Cheshire specimens measure 7 in. × 1¾ in. (180 × 45 mm.) L./B. 4.0, but we have no British examples of the two extreme Swedish forms—var. *elegans* Tis., 12 in. × ¾ in. (300 × 20 mm.) L./B. 15, or var. *latifolius* Alpers, 3¼ in. × 1¾ in. (82 × 44 mm.) L./B. less than 2!

Stipules obtuse, often exceeding the internodes, thin and scarious, very variable in colour, ultimately fibrous from decay. Hagstr., (*l.c.*) 250, gives "without the double ridges like *P. perfoliatus* and *alpinus*" —on p. 255 he gives *P. perfoliatus* "without ridges," which is correct; *P. alpinus* usually has these ridges, ± conspicuous. Peduncles the longest of any species—hence the name—6 in.-16 in. (15-40 cm.) in this country, but longer in America and Sweden—equal, slightly thicker than the stem and greatly exceeding their subtending leaves. Spike densely flowered and fruited, normally 1¾ in.-2¾ in. (4.5-7 cm.). Dried fruit very large, with a prominent keel often expanded into a wing—especially upward—which may rise above the level of the beak.

This species is a characteristic and beautiful deep-water form, frequent in Windermere, Coniston, Ullswater and Derwentwater, rare in Esthwaite Water. Elsewhere chiefly in the east of England. Most British examples fall under var. *angustifolius* Graebner in Engler, *Pflanz.*, iv., 11, 1907, 97 (β *foliis angustioribus* Hooker, *Brit. Fl.*, ed. 3, 1835, 77). Both stem and branched leaves rather narrow.

P. PERFOLIATUS L., *Sp. Pl.*, 1753, 126.

Few species of *Potamogeton* show greater variability in leaf-form than *P. perfoliatus* and taxonomists almost invariably divide the natural forms into a number of sub-species, varieties and forms. The chief variation is that of the relative length and breadth—which is most conveniently expressed as the L./B. ratio. This ratio varies in nature from 1.5 to 6.5—in specimens seen—and the narrower leaves are usually lighter in colour, of thinner texture and normally produced on thinner stems having much longer internodes. There is, however, in nature, no constant relation between length of internode and width of leaf. The narrower-leaved forms usually occur in deeper water and therefore in low light-intensities. In Windermere, for example, specimens from 20 ft. of water have a L./B. ratio of 4.1, but this ratio is only 2.4 for specimens from 10 ft.—the water in each case being of equal clearness. It must not be assumed, however, that low light-intensity is only found at great depths, as the following figures show. A light-intensity of approximately 2% of full sunlight is found in Wastwater at 32.8 ft., in Ennerdale at 30.5 ft., Windermere, Coniston and Ullswater at 21 ft., Esthwaite 13 ft., and Bassenthwaite 10 ft. only. Waters which are peaty, turbid or discoloured—owing to suspended material—may possess low light-intensity at quite moderate depths, or even in relatively shallow water. We have already shown (*Journ. Bot.*, 1923, 2-4) that the proportion of lime in the soil upon which this species grows is an important factor in determining the shape of its leaves—the broader-leaved forms occurring on the more calcareous soils, the character of the water being relatively unimportant. The problem was subsequently investigated experimentally (Pearsall and Hanby, *New Phytologist*, vol. xxiv., 2, May 1925, 112-120). Three sets of plants bearing the extreme types of leaves (average L./B.: 1.8, 2.0, 5.5) were grown in tanks on the same soil, under identical light conditions at a depth of 5 ft. By the end of the summer (1920) all were producing similar leaves with a L./B. ratio of about 2.0. The leaves averaged 3.0 cm. in length and 1.55 cm. in breadth. In the following year these plants were grown in different light intensities—the same, one half, and one-fifth of those used the previous year. The same type of leaf was produced in the original L.I., but plants in half this L.I. had leaves 3.3 cm. in length and only 0.9 cm. in breadth—*i.e.*, they were slightly longer and much narrower, having a L./B. ratio of 3.6. The plants in weakest light grew little, had much longer internodes and averaged 1.5 cm. in length and 0.4 cm. in breadth, their L./B. ratio being similar to that from half light-intensity. These experiments left no doubt that some other factor besides light is operating to produce the extreme leaf variation of this species in nature.

Subsequently further experiments were carried out to ascertain the effect of different culture solutions surrounding (1) the roots and (2) the shoots of plants—on the form of the leaves. For full details and figures the reader is referred to Pearsall and Hanby (*l.c.*), 114-116. Briefly summarising the results it was found that the effects were clearly produced mainly by materials absorbed by the roots. The authors' summary (*l.c.*, 117) states, "there are clear grounds for regarding the extreme variability of leaf-form in *P. perfoliatus* as being due to variations under natural conditions of (1) the light-intensity and duration, (2) the calcium content of the soil, (3) the ratio of potassium to calcium in the soil if little calcium is present."

P. perfoliatus is a very widely-distributed species and easy to identify by its perfoliate leaves. The stem is terete, usually stout but often rather slender in deep-water forms, which may be 10 ft. (3 m.) or more, in length. The internodes are variable, long or short but commonly shorter than the leaves. Rarely they may be 10-15 cm. or more (f. *prolixus*). In this form the upper internodes below the primary spike are of this length. Windermere examples are often "f. *prolixus* exactly," according to Dr Hagström.

The leaves are extremely variable, orbicular, ovate, oblong, or lanceolate: sessile (the lowest sometimes stalked) with a cordate and expanded base which partly or completely surrounds the stem. The margins—at least when young—are slightly rough with minute one-celled denticulations which require the microscope for their identity and examination. The apex is usually blunt, often rounded, only occasionally narrowed and bluntly mucronate.

Stipules very short, normally blunt, pale, scarious, without ridges, fugacious. Peduncles equal, about as thick as the stem, very variable in length—in specimens seen, from 2 in.-5½ in. (5-13.5 cm.) and from twice the length of the spike to 5½ times. The spike is thick, densely flowered, usually an inch or more in length—flowers pedicellate. Fruit with dorsal margin semicircular, obscurely keeled with very faint lateral ridges. Ventral margin gibbous in the upper part and obliquely concave to the base. Beak subcentral, slightly recurved.

To give a more adequate conception of the range of leaf-variation in this species we give a few particulars of herbarium examples:—R. Wey, Surrey, 1882, W. H. Beeby, ½ in. × ¼ in., L./B. 2.0; Stream from L. Vample, Tiree, S. Hebrides, 1897, S. M. Macvicar, ¾ in. × ½ in., L./B. 1.5; Towyn, Merioneth, 1902, D. A. Jones, 1½ in. × ¾ in., L./B. 2.0; Windermere (f. *prolixus*), 1913, W. H. P., 1½ in. × ⅝ in., L./B. 2.4; Coniston (var. gracilis), 1919, W. H. P., 2⅜ in.×⅝ in., L./B. nearly 4.0; Coniston ("an extreme type," J. O. H.), 1⅞×less than ⅜, L./B. 5.6; Loch Coron, Anglesey, G. C. Druce, 2⅜ in. × ¾ in., L./B. 3.1; R. Colne, Herts, Dr E. J. Salisbury, 1920, 2 in. × 1⅜ in., L./B. 1.5; Mill Dam, Roxburgh, Scotland, August 1912 (as *Richardsonii*), 3½ in. × 13/16ths in., L./B. 4.4; Loch of Durness, W. Sutherland, 1881, W. F. Miller, 4¼ in. × ¾ in., L./B. 5.6; Mill Dam, Selkirk, 1876, A. Brotherson, 4 in.× ⅝ in., L./B. 6.4.

All British forms of this species are included under the three varieties:—

Var. *ovatifolius* Wallr., *Sched. crit.*, 1822, 66.

To this variety all forms with ovate—or sometimes ovate-oval—leaves much longer than broad, should be referred. Two forms may be mentioned—f. *prolixus* Hagstr. (see above), and f. *macrophyllus* Blytt with large broad leaves, in Ullswater, 4 in. × 2⅜ in.

Var. *rotundifolius* Wallr. (*l.c.*) includes all forms with ± rounded leaves, whose L./B. ratio is usually low.

Var. *gracilis* Cham. et Schl. *Linnæa*, ii., 1827, 190,

Includes forms with relatively long and narrow leaves. Under this variety are three forms varying in little except length of leaf—f. *lanceolatus* Blytt possesses leaves averaging from 7-8 cm.; f. *gracilis* Fries has shorter leaves, 5-6 cm., and f. *longifolius* Tis., longer leaves, 8-10 cm. or more.

P. CRISPUS L., *Sp. Pl.*, 1753, 126. *P. serratus* L., *l.c.* *P. crenulatus* Don, *Prodromus Fl. Nepal.*, 1802, 22.

Stem compressed, obscurely quadrangular, longer sides deeply guttered when mature, ends rounded. Simple below, much and repeatedly branched above. Leaves all similar, sessile but not amplexicaul: margins serrate, often strongly undulate and crisped when mature, but young leaves and lower submerged leaves often flat although finely serrulate on the margins. Apex usually rounded-obtuse but occasionally acute and obscurely mucronate. Normally 3-5 veined, the lateral veins near the margin—the outer being so near as often to be overlooked—with cross venation distant, oblique, and often ± arched. The leaves are lanceolate or linear-lanceolate in shape and commonly 1½ in.-3½ in. (40-90 mm.) long and 8-15 mm. wide, but British examples may be 105 mm. long and only 5-6 mm. wide.

Stipules soon decaying but always present on the younger branches, apex blunt at first but soon becomes torn: short, rarely more than ¾ in.

(20 mm.) long. Spike short, lax, few-flowered (7-10) as a rule, but occasionally more. Peduncle only slightly compressed or channelled (cf. stem), and oval in section, slender, ± curved, commonly 1½ in.-2½ in. (4-6.5 cm.) long.

Fruit quite distinctive and unlike that of any other species. It possesses a long, pointed, slightly curved (falcate) beak usually subequal to the rest of the fruit, in length. Keel prominent, usually with a tooth at its base—the tooth is occasionally very long, and sometimes reduced to a mere tubercle.

Most British forms belong to var. *obtusifolius* Fieber, *Potam. Böhm.*, 1838, 32. The var. *acutifolius* Fieber (*l.c.*) is much more rare but good examples of it were distributed by Miss Ida Roper from Whitchurch, N. Somerset, 21st April 1921, through the B.E.C. The form which has been named var. *serratus* Hudson is a mere state possessing flat leaves lacking marginal undulations but retaining the characteristic serrulations of this species.

P. Lintoni Fryer, *Journ. Bot.*, 1900, 366 (*P. crispus*×*Friesii*); see also *W.B.E.C. Rep.*, 1899-1900, 21. *Rep. B.E.C.*, 1914, 166, and 1920, 152.

This rare hybrid has occasionally been found growing near the parent species and as its general habit closely resembles that of *P. Friesii* in having fascicles of smaller leaves in the axils of the larger it may easily be mistaken for that species. The colour of the foliage, however, is usually a much darker green. Sometimes the leaves more nearly resemble those of the f. *serratus* of *P. crispus*, but lack the saw-like edges of that species. The microscope will be necessary to reveal the exact condition of the leaf-margins. Fryer (*l.c.*) gives " the indistinct, practically obsolete serration " of these as one of his chief characters, but this is not very helpful as the leaves vary considerably in this respect. The older leaves are much more difficult than the younger leaves, which should always be examined first. Usually a few minute denticles may be found near the apex, and the lower margins are ± definitely sinuated with minute projections—which in *P. crispus* form the bases of the teeth—and possibly an occasional minute transparent denticle. The leaves taper at each end, are normally about 5 mm. wide and possess a subacute apex. The original Derbyshire specimens are different in the following respects:—The leaves are narrower—mostly only 3 mm. wide—very dark green in colour, with a very rounded and obtuse apex, and the margins show the merest traces of denticles near the apex only. Dr Hagström confirmed the names of the sheets from which these descriptions are compiled.

P. Cooperi Fryer (*P. crispus* × *perfoliatus*) *Rep. B.E.C.*, 1895 (issued 5th June 1897), p. 497. *P. cymatodes* Asch. et Graeb., *Synops. Mitt. Fl.*, 1897 (published 27th August), 337. *P. undulatus* var. *Cooperi* Fryer, *Journ. Bot.*, 1891, 289.

Stem always compressed and ± furrowed on the flattened broad sides, as in all *crispus* hybrids. Leaves sessile, semi-amplexicaul, oblong, narrow or broad from a rounded or cordate base and always provided with one-celled denticles. Apex obtuse, often rounded and *perfoliatus*-like, never mucronate. Stipules very deciduous on the stem, more persistent on the branches, scarious, truncate. Peduncles slender, equal and normally straight, 1½ in.-2 in. (4-5 cm.). Flower spikes very short: flowers closed but stigmas exerted, abortive.

All British forms are included under var. *serrulatus* Hagstr., which comprises the three forms:—

Forma *eu-Cooperi* Graebner, in Engler, *Pflanz.*, iv., 11, 1907, 134.

Stem-leaves long and broad, usually 6-7 × 2-3 cm. Loughborough Canal, Leics. Hagström (*l.c.*), p. 62, says, "This plant might possibly be *P. crispus* × *praelongus*," but an examination of numerous examples of this form proves that it is not that hybrid—which possesses entire leaf-margins—as the essential denticles are well-marked on all the leaves.

Forma *Jacksonii* (Lees) Hagstr. *P. perfoliatus* var. *Jacksoni* Lees, *Bot. Rec. Cl. Rep.*, 1880, 150. *P. undulatus* (*P. crispus* × *perfoliatus*) var. *Jacksoni* (Lees) Fryer, *Journ. Bot.*, 1891, 290-291.

This has the habit of *P. perfoliatus* and possesses smaller leaves (45-60) × (13-20 mm.). R. Dee, Chester, and several stations in Cambs.

Forma *scoticus* Hagstr.

Has longer and narrower leaves (50-80) × (6-13 mm.) than the preceding forms. Union Canal, above Falkirk, Stirling.

P. UNDULATUS Wolfgang, in Schultes, *Mantissa*, 1827, 360, ex Raunkiaer, *Danske Blomsterpl.*, i., 1896, 104. (*P. crispus* × *praelongus*) ex Caspary (1877). (Not the *P. undulatus* Fryer in *Annals Scot. Nat. Hist.*, April 1892, nor of A. Bennett in *Irish Naturalist*, June 1894. These were both *P. Cooperi*.)

This very rare hybrid is only known at present from Scotland. It much resembles *P. Cooperi*, but differs in possessing leaves with an entire margin, longer and more persistent stipules and a more hooded apex (influence of *P. praelongus*).

P. BENNETTII Fryer, *Journ. Bot.*, 1895, 1 (as *P. crispus* × *obtusifolius* or *Friesii*). (*P. crispus* × *pusillus*) ex Hagström (*l.c.*), p. 63.

Mr A. Bennett admitted this origin in *L.C.*, 1925, No. 1959, and apparently abandons *P. concinnatus* Ar. Benn. in *Journ. Bot.*, May 1908, p. 162, which was the same hybrid.

For detailed description and plate see Fryer (*l.c.*), p. 53, and pl. 33. Hagström (*l.c.*), p. 64, gives excellent diagrams of the stem anatomy. A rare hybrid resembling *P. obtusifolius*—of the species—and *P. Lintoni*, of the hybrids, although its leaves are narrower than those of the latter. Originally found by Messrs R. Kidston and Col. J. S. Stirling, in Wood Pond, Grangemouth, Stirlingshire, in 1890, 1894, and 1897. Excellent fresh material was kindly sent me from this station by Dr G. C. Druce in June 1930.

P. densus L., *Sp. Pl.*, 1753, 126. *P. pauciflorus* Lam., *Fl. Fr.*, iii., 1778, 209. *P. oppositifolius* Lam. et DC., *Fl. Fr.*, 1805, 186.

This species is easy to identify by its opposite leaves. It is very partial to calcareous waters and the stony bottoms of rather rapidly moving streams.

Stem subterete, usually short and frequently with furcate branches in the upper part. Leaves opposite, or nearly so, in pairs (or threes), sessile, amplexicaul, frequently folded and recurved. They vary considerably in shape (ovate or lanceolate, narrowed to the apex which may be obtuse or acute but not mucronate) and size—usually between ⅝ in. and 1 in. in length and up to ⅝ in. wide. In Britain they are always relatively short and never exceed 1½ in. (4 cm.) in length. Stipules absent except in the pair of leaves at the base of the branches and the pair subtending the peduncles. They are somewhat connate with the base of the leaf and the upper oblong portion is free, but they are usually difficult to examine. The peduncles are slender, shorter than their leaves, erect in flower but strongly recurved afterwards. The spike is extremely short and only 4-flowered. The fruit is very thin and lenticular, shows no trace of a keel and contains a spiral embryo of 1½ whorls. The British forms fall under the varieties *angustifolius* and *latifolius* Wallroth, *Sched. crit.*, 1822, 66, and occasionally under var. *lancifolius* Mert. et Koch, ap. Röhl., *Deutsch. Fl.*, i., 1823, 859. This has an elongate stem and leaves narrowly lanceolate with margins nearly straight. The leaves usually lack the folding and arcuation of the type, and are nearly flat. (In *Journ. Bot.*, 1919, 17, these three varieties are given as British, two of them are wrongly quoted, and the var. *latifolius* is omitted from the *L.C.*, 1925.)

P. pectinatus L., *Sp. Pl.*, 1753, 127. *P. interruptus* Kitaibel in Schultes, *Österr. Fl.*, 1814, 328. *P. zosteraceus* Fries, *Novitiae Fl. Suec.*, 1828, 51. *P. flabellatus* Babington, *Man. Br. Bot.*, ed. 3, 1851, 343.

Dr Hagström has rendered a great service to systematic botany by his masterly treatment of the innumerable forms of this cosmopolitan species. On p. 44 he writes, "It is evident that a species appearing under such different climatic conditions—arctic and equatorial—in salt and fresh water—at the shores of the sea and in small lakes, in rivers and rivulets, on muddy fat ground and barren sandy clay bottom, must be met with in very diverse forms. Thus we find forms with horse-hair-like stems and leaves—and, again, stems 2 mm. in diameter at the base and with stem-leaves 5 mm. broad—with short and long sheaths—with large (4.5 × 3 mm.) and smaller (3 × 2 mm.) fruits."

In dealing with the British forms it is necessary to remember that the stem-leaves are always broader than those of the branches, and the lower leaves of any shoot are broader than the upper. Moreover, the lowest stem-leaves, which are of considerable diagnostic value, are usually decayed and absent by the time the plant flowers or fruits.

Dr Hagström has established two varieties—according as their leaf-apex is blunt and mucronate or more gradually tapered and acute. As both these varieties are represented in Britain and as *P. interruptus* is certainly not a separate species, these two varieties should replace the classification of the 1925 *Lond. Cat.*

Var. *ungulatus* Hagstr.

Apices of the stem-leaves and of the spiciferous branches (at least in the upper part) and also of the branch-leaves in the lower part, blunt and rounded with an unguiform mucro, or abruptly cuspidate.

The upper stem-leaves are usually about 1 mm. wide or less. The lower vary from 0.5-2.5 mm. in width and are frequently 5-6 cm. long. Of the seven forms included under this variety only two have, as yet, been recorded as British.

Forma *subaequabilis* Hagstr.

Has stem and branch leaves subequal in width—an unusual character. R. Leen, Notts. (Mitchell); Wallasey, Cheshire (Lomax), and other places.

Forma *latiusculus* Hagstr.

Possesses the broadest leaves of this variety, the lowest being often 2.0-2.5 mm. wide. The var. *ungulatus* is relatively less frequently seen than the following.

Var. *diffusus* Hagstr.

The leaf-apex of all branch-leaves gradually tapering to an acute point. The lower stem-leaves are, however, obtuse. This variety is by far the commonest and most widely distributed of the five varieties into which the species is divided—three of these are not British—and of such extremely variable forms that no fewer than 17 subdivisions are deemed necessary to describe them. Fortunately most British forms fall into a few of these.

Forma *laxus* Tisel., *Potam. succ. exsicc. fasc.*, iii., 1897, Nos. 120-122.

Stem filiform and slender, very short uppermost internodes and peds. often shorter than usual—they are in some other British forms from 3 in.-6 in. in length. Widely distributed in Britain—Surrey, Cambs., Stirling, Outer Hebrides, Orkney, Shetland, Isle of Man, Co. Kerry.

Forma *protensus* Wallr., *Sched. Crit.*, 1822, 67. *P. pectinatus* var. *vulgaris* Cham. et Schl. in *Linnæa*, 1827, 165.

A common deep water form with long internodes and narrow leaves.

Forma *scoparius* Wallr. (*l.c.*). *P. interruptus* var. *scoparius* Fryer, *Journ. Bot.*, 1888, 297. *Pots. Brit. Isles*, 1915, 89.

This is a slender form with an elongated stem much branched above, where the internodes are short and the leaves setaceous—often found in shallow brackish water.

Forma *interruptus* (Kit.) Asch. *P. interruptus* Kitaibel in Schultes, *Oesterr. Fl.*, 1814, 328. *P. pectinatus* var. *interruptus* (Kit.) Ascherson, *Fl. Prov. Brand.*, 1864, 666. *P. flabellatus* Bab., *Man. Brit. Bot.*, 1851, 343.

This is a tall plant with a long and stout stem, copiously branched above and often spreading in ± fan-shaped manner: upper internodes 2 in. (5 cm.) and lower much longer. The lower leaves are long, broad (often 3-5 mm.), obtuse, early decaying. Upper leaves much narrower and branch-leaves filiform. Stipules long, bluntly lanceolate and half-clasping. Spikes about 1 in.-2 in., and usually distinctly (or conspicuously) interrupted. Peduncles normally slender and equal. Fruit somewhat large (4 mm.), with nearly straight ventral margin with a short beak as its upper continuation: dorsal margin ± semicircular but gibbous at the apex which is truncate. The central keel may be prominent or obscure.

The common characteristics of all forms of the var. *diffusus* are (1) the long, gradually tapering and very acute points of the young branch-leaves, (2) the much less acute points of the leaves at the middle of the stem, (3) the broad basal stem-leaves with the " shoulders " of the apex abruptly convex and meeting to form a subacute tip—the general effect being ± obtuse. (4) The involucral leaves differing from all the others in being abruptly cuspidate with a ± distinct mucro—the margins being concave at the tip.

P. SUECICUS Richter, *Pl. Eur.*, i., 1890, 15 (nomen solum). (*P. filiformis* × *pectinatus*) ex Almquist.

Dr Hagström (*l.c.*), p. 20, divides this into four varieties, two of which are found in Britain.

Var. *intermedius* Hagström, f. *pectinatioides* Hagstr.

Found by Dr G. C. Druce in the Shetlands, see *Rep. B.E.C.*, 1920, 51. Dr Hagström always contended (*in litt.* and *l.c.*, 37) that the record of *P. vaginatus* from these islands could not stand and had it not been for his untimely end was intending to spend a holiday here the following summer to investigate this and other problems on the spot. However, we are greatly indebted to Dr Druce for his untiring efforts to discover the doubtful plant and for his kindness in sending us an authentic example. It will be noted that Mr Arthur Bennett has deleted *P. vaginatus* from the latest (1925) *Lond. Cat.* list.

Var. *obtusus* Hagström, f. *Kerneri* Hagstr. (=*P. juncifolius* Kerner ap. Fritsch).

A specimen from R. Isis, Port Meadow, Oxon, June 1880 (G. C. Druce), shows the following characters—leaves dark green, very wide (1.5-2.5 mm.) and remarkably obtuse, the apex rounded and smooth with no trace of a point—and agreeing perfectly with authentic specimens from the locus classicus, Northern Tyrol.

P. FILIFORMIS Persoon, *Syn. Plant.*, i., 1805, 152. Nolte, *Nov. Fl. Holst.*, 1826, 20. *P. marinus* L., *Sp. Pl.*, 1753, 126. *P. marinus* L. ex Fr., *Novitiæ Fl. Suec.*, 1828, 54.

A rare species of Scottish and Irish lochs. Stem slender, filiform, sparingly branched. Leaves all similar, filiform, tapering, obtuse (broader leaves subacute), 1-veined to the naked eye, but actually 3-nerved, there being a thin nerve in the actual leaf-margin. Stipules long, narrow and acute, clasping for about half their length, free above, deciduous. Spikes few-flowered in distant whorls. Peduncles very long, often 4 in.-9 in. (10-23 cm.) in Britain, even 12 in. (30 cm.) in Norway. Fruit small, nearly oval, ventral margin slightly convex with very small beak near its upper end, apex rounded and dorsal margin semicircular.

The following British forms have been recorded:—

Forma *luxuriosus* Hagstr., *Potamog.* in Neuman, *Sveriges Flora*, 1901, 794.

Differs from the type—which is usually of low growth—in being often 1 ft. (30 cm.) high, with very long leaves, and conspicuous spikes. Specimens from " Nr. Old Man of Wick, Caithness, 1893, (Kidston)" were 1 ft. 8 in. (50 cm.) in height. This form also occurs in Asta Loch, Shetlands, with *P. suecicus.*

Forma *major* Tis. (*l.c.*), Nos. 114-115.

A form with longer internodes and larger fruits than the type. Orkneys and Shetlands, Caithness and Berwick.

Forma *crinisimilis* Hagstr.

An extremely slender, very delicate and much branched form with hair-like leaves, very short internodes and shorter peduncles than in the type. Very rare.

Forma *alpinus* Blytt, *Norges Fl.*, i., 1861, 370.

The distinguishing features of this form are the narrow, elongate leaves rising arcuately from their sheaths, and the small subglobose fruits. Camilla Loch, Fife, 1909 (West.).

ADDITIONS TO THE PREVIOUS PAPER I. (*REP. B.E.C.*, 1929).

To complete the list of British species recorded to date, it is necessary to give particulars of the hybrids of the grass-leaved species described in our preliminary paper, I., *Rep. B.E.C.*, 1929, 148-156. Most of these hybrids are extremely difficult to determine owing to the fact that there are often only slight differences in the characters of the two parent species and the resultant hybrids sometimes more closely resemble one or (at other times) the other of these species and consequently greatly differ among themselves. It is therefore impossible to give a description of the hybrid which would be of much use in its identification. As in the case of all hybrids only a perfect knowledge of all the characters of each of the parent species will enable us to recognise the evidence for each in the hybrid. Hybrid forms that are " intermediate in character between the two putative parents " are much rarer than the literature on the subject would lead us to suppose. Far more frequently the hybrids of any two species are roughly divided into two series—each resembling one of the parents more than the other. This predominant partner—as a rule—is easily recognised but the less evident parent can only be ascertained by noting the minute modifications of any character of the former through the influence of an opposite character of the latter. This requires careful and patient investigation under the microscope.

P. DUALIS Hagström (*P. panormitanus* × *pusillus*), *l.c.*, 103.

An extremely rare and difficult hybrid easily confounded with the two following. The characters to be specially considered are those in which the parent species mainly differ—habit, leaves (stiffness, nervation and apex), stipules, winter-buds and fruit. The only records are Ponds near York, 1881 (Bennett); Shropshire, 1886 (Beckwith); Wytham, Berks (Druce) *in Rep. B.E.C.*, 1920, 152.

P. TRINERVIUS Fischer, *Bayer. Pot.*, etc., 1907, 29. (*P. panormitanus* × *trichoides*).

Hagström (*l.c.*, 104) only refers to this hybrid, having then seen it only from Bavaria, but does not fully describe it. Subsequently (*in litt.*) he referred the two following examples to this hybrid:—Aberarth, Cardigan, 23rd August 1899 (Marshall), and Swainsthorpe, Norfolk, 1919 (Druce).

P. FRANCONICUS Fischer var. *spicosus* Hagstr., *l.c.*, 126. (*P. pusillus* × *trichoides*).

This variety has the upper part of the stem resembling that of *P. trichoides*, thread-like with numerous spiciferous branches and long peduncles. The leaves are stiffer than those of *P. pusillus*, dark green and of intermediate width. This hybrid is rather more easily identified than either of the two preceding, on account of the greater differences between the characters of the parent species.

Dr Hagström named the following examples as belonging to this hybrid:—Near Peterborough, Northants, 1909; White Water river, near Warnborough, Northants, 23rd August 1897 (Palmer); Bressington, E. Suffolk, August 1883; near Marsh Gibbon, Bucks, June 1913; Mason's Drain, near Eye, Northants, September 1909; Pools, Marden, W. Kent, 20th July 1893 (Marshall), as *Berchtoldi*, *Rep. B.E.C.*, 1893, 425. All these were collected by Dr Druce where not otherwise stated.

P. SEMIFRUCTUS Ar. Bennett ap. Graeb. *Das Pflanzenreich*, 1907, 138 (wrongly cited as *P. semipuctus*) = *P. Friesii* × *obtusifolius*.

Dr Hagström (*l.c.*, 96) refers specimens by E. Fries in *Herb. Norm.*, v., 81, distributed under the name *P. obtusifolius* var. *lacustris*, to this hybrid. In *Journ. Bot.*, 1919, 18, Mr Arthur Bennett records *P. semifructus* from Wire Mill Pond, Surrey, 1882 (Beeby), and Clunie Loch, Perth, 1882 (Sturrock).

P. PUSILLIFORMIS Hagström (*P. Friesii* × *pusillus*), *l.c.*, 97. *P. intermedius* Fischer.

In *Journ. Bot.*, 1919, 18, this is recorded by Mr Arthur Bennett from Betchcott, Salop, 1882 (Beckwith), and Coulterhouse, Sauchie, Stirling, 1892 (Kidston). It is possible that some British specimens labelled *P. Berchtoldi* Fieber belong to this hybrid.

P. SUDERMANICUS Hagström (*P. acutifolius* × *pusillus*), *l.c.*, 73.

"The plant is collected at the most northern border of the distribution area of *P. acutifolius* and probably belonging to the greatest rarities of the vegetable kingdom. I have named it after my beautiful native county, Sudermania, where it has been gathered by Dr C. J. Hartman." In *Journ. Bot.*, 1922, 55, Mr Arthur Bennett—in somewhat vague terms—refers a plant gathered by Mr C. E. Salmon, "Sussex E., ditch near Camber Castle, 17/7/1900," to this hybrid.

ERRATUM.

I. 155. Under *P. trichoides* there is an omission in regard to the length of the peduncles. Between "near the top" and "5-11.5 cm." insert—usually under 4 cm. although Fryer gives 2 in.-4½ in. (5-11.5 cm.). In copying out my draft notes for the press these words were unfortunately omitted.

LONDON CATALOGUE *EMEND.*

	POTAMOGETON Linn. 462.	
1944	natans Linn.—111	II.385
	b. prolixus Koch	
	c. ovalifolius Fieb.	
	d. rotundifolius Bréb.	
	e. terrestris Gray	
	× polygonifolius	
	(P. gessnacensis Fisch.)	II.386
1945	polygonifolius Pourr.—112	II.386
	b. lancifolius Cham. et Schl.	
	c. cancellata Fryer—1	
	d. amphibius Fries	
	× praelongus	
	(P. Macvicarii Benn.)—1	II.387
1946	coloratus Hornem.—44	II.387
	× gramineus	
	(P. Billupsii Fryer)—2	II.388
	× pusillus	
	(P. perpygmaeus Hagstr.)—1	II.388
1947	alpinus Balb.—79	II.388
	b. lacustris Marss.	
	c. obscurus Asch.	
	d. Palmeri Druce	
	× crispus	
	(P. venustus Baagöe)—2	II.389
	× gramineus	
	(P. nericius Hagstr.)—1	II.389
	× natans	
	(P. Drucei Fryer)—2	II.390
	× polygonifolius	
	(P. spathulatus Schrad.)—C.	II.391
	× praelongus	
	(P. nerviger Wolfg.)—See 1956.	
	× pusillus	
1948	(P. lanceolatus Sm.)—2	II.391

1949	gramineus L.—83	II.391
	b. graminifolius (Fries)	
	c. fluvialis Fries.	
	d. lacustris Fries.	
	× natans	
	(P. sparganifolius Laest.)—3	II.393
	=(P. Kirkii Syme)	
	× polygonifolius	
	(P. Seemenii Asch. et Graeb.)—H., C.	II.394
1950	*Nuttallii Cham. et Schl.	
	(P. pennsylvanicus)—1	II.394
1951	*foliosus Rafin.—1	
1952	nitens Weber—34	II.394
	b. subgramineus Hagstr.	
	c. subperfoliatus Hagstr.	
	d. subintermedius Hagstr.	
1953	lucens Linn.—86.	II.397
	b. acuminatus (Schum.) Fries	
	c. longifolius DC.	
	d. insignis Tis.	
	× natans	
	(P. sterilis Hagstr.)	II.397
	=(P. fluitans Roth)—4	
	× praelongus	
	(P. Babingtonii Benn.)—1	II.398
1954	decipiens Nolte—19	II.398
	b. brevifolius Hagstr.	
	c. longifolius Hagstr.	
	d. latifolius Hagstr.	
1955	angustifolius Bercht. et Presl—41	II.400
	=Zizii Roth.	
	b. validus Fieb.	
	c. elongatus Fieb.	
	× natans ?	
	(P. crassifolius Fryer)	II.401
1956	nerviger Wolfg.—1	
	=(P. Griffithii Benn.)	II.402
1957	praelongus Wulf.—59	II.402
	b. angustifolius Graeb.	
1958	perfoliatus Linn.—102	II.403
	b. ovatifolius Wallr.	
	c. rotundifolius Wallr.	
	d. gracilis Cham. et Schl.	
1959	crispus Linn.—103	II.405
	b. serratus (Huds.)	
	c. acutifolius Fieb.	
	d. obtusifolius Fieb.	
	× Friesii	
	(P. Lintoni Fryer)—4	II.406
	× perfoliatus	
	(P. Cooperi Fryer)—6	II.406
	× praelongus	
	(P. undulatus Wolfg.)—1	II.407
	× pusillus	
	(P. Bennettii (Fryer)—1	II.407
1960	densus Linn.—62	II.408
	b. angustifolius Wallr.	
	c. latifolius Wallr.	
	d. lancifolius Mert. et Koch	

1961	zosterifolius Schum.—25	I. 149
	b. latifolius Gray	
1962	acutifolius Link—17	I. 149
	b. major Fieb.	
	× pusillus	
	(P. sudermanicus Hagstr.)—1	II.413
1963	obtusifolius Mert. et Koch—74	I. 150
	b. fluvialis Lange et Mort.	
1964	Friesii Rupr.—51	I. 150
	× obtusifolius	
	(P. semifructus Ar. Benn.)—2	II.412
	× pusillus—1	
	(P. pusilliformis Hagstr.)	II.412
1965	rutilus Wolfg.—2	I. 154
1966	pusillus Linn.—108	I. 151
	b. lacustris Pears.	
	c. Berchtoldi (Fieb.) Asch. et Graeb.	
	d. tenuissimus Mert. et Koch	
	× trichoides	
	(P. franconicus Fisch.)—7	II.412
1967	panormitanus Biv. Bern.—27	I. 154
	b. minor Biv. Bern.	
	× pusillus	
	(P. dualis Hagstr.)—3	II.412
	× trichoides	
	(P. trinervius Fisch.)—2	II.412
1968	Sturrockii Ar. Benn.—2	I. 153
1969	trichoides Cham. et Schl.—9	I. 155
	b. Trimmeri Casp.	
1970	pectinatus Linn.—91	II.408
	b. ungulatus Hagstr.	
	c. diffusus Hagstr.	
(1971)	*f.* interruptus (Kit.) Asch.	
	f. scoparius Wallr.	
1972	filiformis Pers.—21.	II.410
	f. luxuriosus Hagstr.	
	f. major Tis.	
	f. crinisimilis Hagstr.	
	f. alpinus Blytt	
	× pectinatus	
	(P. suecicus Richt.)—1	II.410

SPECIES STUDIES IN PLANTS.

E. M. Marsden-Jones, F.L.S., and W. B. Turrill, D.Sc., F.L.S.

About six years ago we realized that many important questions concerning the taxonomy of British plants were not likely to be solved by the isolated methods so much in vogue. It was clear that taxonomists largely ignored the work of geneticists and ecologists, that geneticists troubled little about taxonomy and largely ignored ecological studies, and that some ecologists were careless about taxonomy and failed to appreciate the results of genetical research. A preliminary survey of several genera convinced us that only by an attack on a few chosen genera by the combined methods of herbarium studies, field observations, and controlled breeding, if possible with the help of a cytologist and an anatomist, could we hope to add anything of real value to a solution of those problems conveniently considered as "the species question."

A few words may be said regarding our terminology, aims, and methods:—

Terminology.—The terms ordinarily used by taxonomists, geneticists, and ecologists, are, for the most part, defined with greater or less accuracy either in their places of first publication or in modern text-books. It seems necessary, however, to have one term which shall be of sufficiently wide application to include all differences in characters between individuals within a given taxonomic unit, whether they have or have not a genetical basis. The term *variation* is here used with that meaning.

The *objects* we have in view in our research may be stated as follows:—

A. *Theoretical.* 1. To determine if it is possible to define taxonomic units in general (species, varieties, etc.) with greater accuracy than has hitherto been done. 2. To determine the modes of origin of taxonomic units, and the nature and causes of their distribution.

B. *Concrete.* 3. To stabilise the taxonomy of certain British, European, and Mediterranean plants.

Methods.—The work at Marsden-Jones' Research Station at Potterne, near Devizes, Wiltshire, is divided into three main branches: that connected with—1. the Orders Beds, 2. the Transplant Experiments of the British Ecological Society, and 3. the Experimental Ground.

1. The Orders Beds are planned to hold 1100 species of British plants and about 700 are now grown from seeds or other material of known wild origin. Apart from the accumulation of many interesting biological facts and the advantages of having a variety of living mate-

rial at hand for reference, seeds are distributed annually to various botanical institutions and authenticated material has been grown for many botanists.

The greater part of the available area is occupied by the Experimental Beds which hold between five and six thousand plants. Fully controlled breeding is now done in a newly constructed insect-proof glass house, and also under cages and in tiffany bags in the beds themselves.

In addition we have made extensive analyses, in many parts of Great Britain, of wild populations of the species with which we are particularly working. These have been exactly correlated with breeding experiments. Finally, we have a carefully prepared herbarium and library groundwork, and our results are filed in some 8000 herbarium sheets, card index specimens, and boxed and bottled samples.

2. The Transplant Experiments have been dealt with in a paper published in the *Journal of Ecology*, xviii., 352 (1930), and readers are referred to this.

3. We have space for only a brief summary of the more important results already obtained from breeding experiments and field studies.

Silene.—The distinctness of *Silene vulgaris* and *S. maritima* (excluding the mountain variations) has been proved. They rarely cross in nature, because they rarely meet, but are fertile together reciprocally. The results of crossing the two species under control and obtaining F_2 and backcross generations has proved the genetic nature of some of the distinctive specific characters, such as those of habit, foliage, inflorescence, calyx, petals, and capsules, and also of some varietal characters such as anthocyanin development and seed pattern. There is great polymorphism, which is partly parallel in the two species, as for example in the presence or absence of anthocyanin in different floral organs, and tubercled and armadillo patterns in mature seeds. On the other hand, *S. maritima* is always glabrous so far as we have recorded, while we recognise three types of indumentum in *S. vulgaris* besides completely glabrous plants.

The great intraspecific polymorphism and hybridisation, resulting in numerous character combinations, compelled us to devise a scheme for tabulating our results in a comparative manner. Letter and figure symbols indicate different characters for the various organs, and different combinations are easily compared.

Interspecific crossing of the two species is comparatively rare in nature, though we have discovered it in a few localities in the south of England, and have this year scored a batch of 68 plants obtained from wild hybrid seed.

Attention is now being paid to biological features in life-histories, and light is already being thrown on these ecologically distinct species. We are at present bound to accept them as such, in the sense that were it not for their different physiological characters, enabling them to flourish in different habitats, they would fuse to one polymorphic species, as it is possible they have done in certain mountain regions, unless, indeed, they have actually segregated as they have extended from such areas (see series of papers in *Kew Bulletin*, 1928 onwards).

The character differences probably arose as mutations. All examined material has the same chromosome number with n=12 (Whyte in *Kew Bulletin*, 1929, 200).

Centaurea.—In the *London Catalogue* (ed. xi., 1925) 15 Knapweeds are given full rank as native or denizen British species, on the authority of Mr C. E. Britton, in addition to *C. jacea*, which is regarded as only a casual. In Druce's *British Plant List* (ed. ii., 1928) a similar classification is followed. We have now definite proof that three of the so-called species are hybrids, and have good evidence that others are also either heterozygotes or of hybrid origin. The relative status of *C. nemoralis* and *C. nigra* (*C. obscura*) is for the moment uncertain, but if we regard them as species we are prepared to reduce the real British species of *Centaurea* to four—*C. nemoralis* Jord., *C. nigra* L. (*C. obscura* Jord.), *C. jacea* L., and *C. scabiosa* L., apart from *C. cyanus* L., *C. paniculata* L., *C. aspera* L., and *C. calcitrapa* L. with which we have not worked in detail.

C. scabiosa is very interesting. It shows considerable polymorphism in foliage characters and in flower colour, but we have not succeeded in crossing it with any member of the *nigra* group nor have we found any wild specimens which could be considered hybrids with *C. scabiosa* as one of the parents, though the species commonly grows in close association with members of the *nigra* group. *C. scabiosa* has, however, been successfully crossed with the yellow-flowered European *C. collina*, giving a most interesting series of hybrids.

Results of more immediate importance have been obtained by our analysis and synthesis of plants of the *nigra* group. Preliminary herbarium studies suggested that *C. jacea* (s.l.) was partly responsible for the polymorphism which occurs in wild populations of Knapweeds in various parts of the south of England. Working on this suggestion we have proved the general truth of our hypothesis, and have also accumulated exact data on many details.

Variation in the species of *Centaurea* with which we have worked is of three kinds:—

1. *Habitat fluctuation.*—This is not of great importance. Thus on the Transplant soils *Centaurea nemoralis* has shown very little variation compared with *Plantago major* on the same soils. Dwarfed forms occur in exposed situations, as on some cliffs and some chalk downs, and in grazed pastures.

2. *Intra-specific variation* with a genetical basis is represented by such characters as radiate, semi-radiate and eradiate capitula; long, medium, and short florets; sex variations (in part correlated with flower size); colour variations; leaf-shape variations (in basal and cauline leaves); habit (to a certain extent); and precocity of flowering.

3. *Variations due to inter-specific heterozygosity.*—These are very numerous, affect most parts of the plant, but are best seen in the phyllaries, and have led to the describing of many new species which are really only hybrids, back-crosses, or segregates of various kinds.

From selfings of certain named plants we have obtained many character combinations, some of which agree with authentic material of described species. Moreover, by crossing *C. nemoralis* varieties with *C. jacea* we have synthesised what are phenotypically the same so-called species. These statements are particularly well illustrated by the analysis and synthesis of *C. jungens* Gugl. and *C. pratensis* Thuill. Back-crossings and further analyses are now in progress. Most races of *Centaurea* with which we have worked are self-sterile to a high degree, though we have one or two exceptions to this.

The research has been carried a considerable step forward by extensive field-work. In some half-a-dozen localities we have studied hybrid-swarms which form most remarkable mixed populations equal in interest to comparable populations of other genera recorded in New Zealand, South Africa, and elsewhere. In these populations it is possible to find the parents quite or nearly pure, and several or most of the so-called allied species. The field evidence is also conclusive that in Britain *C. jacea* is a more recent immigrant than *C. nemoralis*, which in turn is more recent than *C. nigra* (s.s.) which reaches to Scotland and western Wales.

Our main work has been on these two genera, *Silene* and *Centaurea*, but subsidiary work on other genera may be briefly considered :—

The hybrid, *Geum intermedium* Willd., has been shown to segregate on selfing. On back-crossing with either parent (*G. rivale* L. or *G. urbanum* L.) the progeny are very much nearer the parent used. Back-crosses between *G. intermedium* and *G. rivale* can easily be mistaken for true *G. rivale* as is well exemplified by a hybrid population which has been studied near Bradfield, Berks.

Sex and colour variations have been studied in *Ranunculus acris* L. and *R. bulbosus* L. From the breeding and cytological investigations on sex there has emerged the conception of a " time factor," involving the interval between the initiation of the reduction division in anthers and in ovules (Marsden-Jones, Turrill, and Whyte, *Journ. Genetics*, xxi. (1929)). Three colour types (full yellow, lemon yellow and pale) and six sex types (hermaphrodite, hermaphrodite reduced on the male side, essentially female but producing a very little viable pollen, entirely female, entirely male, and neuter) are now known for *R. acris*, and several of these variations have also been found in other species of the genus. Crosses involving extreme female and male plants have yielded females, hermaphrodites, and intermediates in F_1, and male plants have re-appeared in a back-cross with the original male. In controlled experiments up to 1930 maleness only comes out when two doses are put in, and not when two F_1 sibs are crossed together, although our generations have been large. Maleness is associated, in our experience constantly, with a peculiar crimping of the leaves. Self-sterility is very marked in *Ranunculus acris* and *R. bulbosus*.

By crossing *Saxifraga rosacea* Moench with *S. granulata* L., each with 16 gametic chromosomes, a non-segregating tetraploid was obtained with n=32 (Marsden-Jones, Turrill, and Whyte in *Journ. Genetics*, xxiii. (1930)). This has now bred true to the third generation of over 500 plants. In crossing with either of the original parents, *S. potternensis*, as we have named the tetraploid, appears to be behaving genetically as a species in that the F_1 back-crosses show no segregation.

Space will not permit dealing with our work on *Anthyllis vulneraria*, *Ranunculus ficaria*, and *Primula vulgaris*.

The tentative conclusions we have reached may be summed up as follows: —

1. A conception of "species" must include a consideration of *isolation*, which may be geographical (as in *Centaurea collina* and our English races of *C. scabiosa*), ecological (as in *Silene maritima* and *S. vulgaris*), or genetical (as in *C. nigra* or *C. nemoralis* and *C. scabiosa*).
2. Hybridisation is one of the ways in which taxonomic units are produced (as in *Saxifraga potternensis*).
3. Some accepted taxonomic units are not stable, but are heterozygous phenotypes which segregate on selfing, back-crossing, or further crossing, giving rise to complex hybrid populations (as in *Centaurea* plants of the *nigra-jacea* group).
4. Species, as commonly accepted, are much more variable, much more complex, and much more heterozygous in intra-specific characters than is generally realised.
5. The species question is one to be investigated by methods of experiment with living material combined with field-studies and laboratory, herbarium, and library research.

The research at Potterne is being aided by a Government grant received from the Royal Society.

NOTES ON MENTHA.

J. FRASER.

× *Mentha niliaca* Jacq., var. *Druceana* Fraser, var. nov. (*M. longifolia* × *rotundifolia*). Stem stout, erect, freely branched, with slender, sharply ascending branches, moderately densely villous, with deflexed or retrorse hairs, but loosely so in some places, 2-3 ft. high; internodes 3.5-6 cm. long. Leaves narrowly ovate or ovate-lanceolate, gradually narrowed from near the base to a long, acuminate, very acute point, sessile, cordate or sub-cordate at the base, sharply serrate, thinly hairy with very short hairs above and dark green, undersurface grey tomentose with short hairs, but pilose on the principal nerves with hairs of medium length, ± netted with sunk veins on both faces; superficies 3.5-7.5 × 1.5-2.5 cm.; serratures very numerous, directed forward, irregular in size and spacing, in some specimens rather deep (0.25-3 mm.), acute; leaves of the branches lanceolate, otherwise like those on the stem. Spikes cylindrical, very dense, 3.5-6 cm. long, the lateral ones close under the main spike, nearly horizontally patent. Bracts setose, plumose, slightly longer than the open corolla. Pedicels villous with 3-5 jointed, loosely reflexing hairs. Calyx villous; teeth lanceolate, very slender, ciliate with 2-6 jointed hairs, 4-5 joints being the most common. Corolla pale lilac-purple. Stamens included, rarely exserted.

The above description was first drawn up from a specimen gathered near Abingdon, Berks, in 1926, by G. C. Druce, and distributed under the name of × *M. niliaca* Jacq. The specimen reached me after I had finished the descriptions of Menthae Britannicae for the *Supplement of the B.E.C. Report* for 1926, and though I had Jacquin's description it was inadequate to distinguish the above from the type, and time failed me just then to consult his plate. The description is slightly altered to include a specimen from Yarnton, Oxon, collected in 1927 by G. C. Druce, with a longer main spike; and another from Tenby, Pembroke, collected by Miss E. S. Todd in 1929, with deeper serratures to the leaves. The long, gradually acuminate leaves readily distinguish the variety from all others of this group of hybrids.

× *M. niliaca* Jacq., var. *mollissima* Borckh., f. *brevipila*, forma nov. The leaves are dark green above (not grey), and covered with a very short mealy pubescence, consisting of the bulbous basal joint of the hairs, intermixed with a few, very short, slender hairs; the under surface is more grey and, while the lower leaves are very thinly hairy, showing some amount of mealy pubescence, the upper and younger ones are tomentose beneath. In all other respects this is the same as the variety *mollissima*.

This variety bears the same relation to var. *mollissima* as the var. *Nicholsoniana* does to var. *nemorosa*, and var. *pulverulenta* (Strail) does to *M. longifolia.* The two last named were originally described as species. I have been unable, so far, to get the locality or name of the collector of the new form. It was sent me by Dr Druce in 1929.

× *M. rubra* Sm., var. *Turreffii*, var. nov. (*M. spicata* × *verticillata*). Stem stout or slender, according to vigour, flexuous, branching ± under the main inflorescence, purple or green, according to exposure, 2-3 ft. high, thinly or rather thickly covered with short deflexed hairs on different plants; internodes 3-5.5 cm. long. Leaves narrowly ovate, obtuse to sub-acute, rounded at the base or slightly decurrent on the petiole, serrate, thinly sprinkled with short adpressed hairs above, and pilose on the principal veins beneath with longer hairs, sometimes rather densely hairy above or below; superficies 4-5 × 2.2-2.5 mm.; serratures irregular, directed forward, obtuse to sub-acute, 0.25-1.25 mm. deep; petioles hairy, 5-7 mm. long. Bracts ovate, similar to the leaves, with shorter petioles, very gradually decreasing in size, until they are very small, but always exceeding the open flowers. Pedicels glabrous or thinly furnished with 2-4 jointed hairs. Calyx tube thinly covered with 2-4, rarely 5 jointed hairs, tubular but slightly wider at the teeth; teeth awl-shaped, ciliate with 1-2 rarely 3 celled hairs. Stamens normally included.

The above variety would seem to exclude × *M. rubra* Sm., but in all respects it resembles × *M. rubra* Sm., var. *raripila* Briq., with a greater degree of hairiness, but more irregular in having hairs on the pedicels and calyx. In 1929, the Rev. Francis Turreff made a gathering of eighteen specimens within 150 yards of one another on the banks of the classic Mill of Tifty Burn, Fyvie, Aberdeenshire, at a point where the stream is eight feet wide. The previous year he sent some specimens which were very erratic in their leaves. Some of them were densely hairy on the upper face, with rather long hairs, mixed with some mealy pubescence; other leaves on the same stem were densely hairy beneath. In other respects they were like the 1929 specimens.

× *M. verticillata* L., var. *ovalifolia* H. Braun, f. *subglabra*. (*M. aquatica* × *arvensis*.) The stem and both faces of the leaves of this form are sub-glabrous, but in all other respects it conforms to an average × *M. verticillata*, var. *ovalifolia*. The pedicels and calyx are hairy as usual.

I omitted a sub-glabrous form from previous descriptions in the hope of finding a sub-glabrous form of the type × *M. verticillata*, and though I have a sheet from Hurlay, near Great Marlow, Berks, in 1888, it is not extreme or good. I do not know to what variety John Gilbert Baker attached the var. *subglabra*, but as the varieties were not segregated in British books or lists in his day, he might have been satisfied with any sub-glabrous form of *M. sativa* L. In any case sub-glabrous forms are most frequent in var. *ovalifolia*, in my experience. My sheet of the f. *subglabra* was collected on the banks of the Thames, below Weybridge, Surrey, in 1898.

BRAMBLE NOTES, 1930.

WM. WATSON.

RUBUS VULGARIS Wh. & N.

In view of the known distribution of *R. vulgaris* on the Continent it has always been an interesting question whether this bramble occurs in Britain. It is absent, apparently, from Scandinavia, Denmark, Sleswick-Holstein and the north of France, is of sporadic occurrence in Belgium, the Lower Rhine and the north-west German plain, and first becomes frequent going eastwards into the hill country towards the Weser.

I have seen two specimens in *Hb. Druce* which I think may be identified as *R. vulgaris*, although as one example is in fruiting condition, and neither example is accompanied with collector's notes, there must be a little uncertainty about the name. One example was collected by L. Cumming at Sellack, Herefordshire, and is named "*R. micans*." The other was collected by G. C. Druce at Brickhill. Bucks. 1899, and the ticket bears the note "May be *R. carpinifolius*, but if so with abnormal panicle. W.M.R." It seems worth while looking out for *R. vulgaris* in England, and I accordingly give a short description of the bramble.

Stem angled, rather hairy at first, armed with strong, large-based, declining and falcate prickles. Leaves glabrous above, softly greyish-felted and hairy beneath; rather coarsely, deeply and more or less doubly serrate-dentate. Terminal leaflet rather narrow, ovate-rhomboid, gradually acuminate, the base rounded and quite entire. The other leaflets cuneate below. The long petioles thinly hairy, armed with hooked prickles; stipules eglandular.

Panicle large and compound, lax, pyramidal; its lower branches long-peduncled and half erect. Rachis angled and flexuose, crimson; armed with falcate, broad-based prickles; and, like its slender branches and pedicels, furnished rather thinly with long patent hairs. Calyx segments patent after flowering, ovate cuspidate. Petals oblong, pinkish or white. Stamens very little longer than the styles. Fruit oblong.

In some respects specimens of *R. vulgaris* remind one strongly of *R. Selmeri* and *R. lentiginosus* Lees. The likeness to *R. Lindleianus* Lees, with which Focke merges it, chiefly lies in the leaves. I should say that *R. Lindleianus* is sufficiently distinct in its villose, broader, cylindrical panicle, leafy nearly to the top, and horizontally and closely and intricately branched; in its white flowers (occasionally flushed with crimson on the outside in the opening bud) and its acuminate calyx segments more decidedly reflexed after flowering; in its longer stamens; and in its leaves more completely white felted beneath, and terminal leaflets more obovate and cuspidate and more shallowly toothed, and its glandular stipules; and finally in the small, subglobose fruit composed of unequal drupelets.

In habit there is probably a considerable difference also.

R. Lindleianus forms a tall, dense bush, greatly branched, sending out in autumn numerous whip-like branches which root into the ground freely at their tips. Focke mentions that *R. vulgaris* does not root freely at the tips. The panicles of *R. Lindleianus* also are greatly developed, often exceeding a foot in length. The flowers open widely, the petals at length spreading horizontally. The leaves are retained through the greater part of winter. On the whole it belongs, I think, more nearly to the *Discolores* than *R. vulgaris* does.

Much more closely allied to *R. vulgaris* is the bramble made known by A. Ley originally from Aconbury, Herefordshire, and subsequently from other stations in Herefordshire. Purchas relates that Briggs was inclined to refer this bramble to *R. Borreri*, although a very strange form of it; that Bagnall regarded it as referable to *R. Salteri*; with which opinion he himself felt be must agree. Babington's opinion—especially valuable as he was the author of the species *R. Salteri*—was that the bramble was not *R. Salteri*. Focke confirmed the opinion that it was *R. Salteri*, and it was accordingly issued in the *Set of British Rubi* to represent that species. Sudre took the identification in good faith, drew the plant for his Monograph from the specimen in the *Set of British Rubi*, and wisely made his description from that specimen, uninfluenced by Babington's description of the real *R. Salteri* of the Isle of Wight. That he was not unaware of the discrepancy may be judged by his remark, " J'ai décrit la plante de Hereford (Set No. 35)."

As Babington said, the Aconbury bramble is not *R. Salteri* Bab. From my own study of the bramble I can fully agree with Sudre that it falls easily within the group of *R. vulgaris*. I propose that it be known as

RUBUS PERARMATUS nov. sp.

The following notes will supplement Sudre's description. Stem glabrous or subglabrous, purple, bearing scattered stalked glands and rather numerous short prickles. Leaves quinate, glabrous above, and greyish felted and thickly pubescent or shortly hairy beneath; the leaflets not contiguous. Terminal leaflet roundish obovate, with a long cuspidate-acuminate point and a nearly entire base; sharply, deeply, somewhat doubly toothed; twice as long as its petiolule. Basal leaflets with stalks about 8 mm. in length.

Flowering branch densely pubescent to its base. Panicle elongate, cylindrical or pyramidal, armed with numerous short but unequal falcate and declining prickles, and furnished with several simple leaves. Rachis pubescent and shortly hairy, bearing scattered stalked glands; branches very prickly. Calyx grey felted; segments ovate-lanceolate attenuate, patent or more or less erect on the small, subglobose fruit. Stamens equalling the styles. Young carpels densely pilose.

Known from *R. vulgaris* by the much shorter, straighter, more numerous prickles (12-20 on the panicle branches), by the more discolourous leaves, the longer-stalked leaflets with veins more deeply impressed, and by the smaller fruit with more erect calyx segments and very hairy carpels.

I have seen plants of *R. Salteri* Bab. in Apse Castle Wood, and in other stations in the south-east of the Isle of Wight. For the present it may suffice to call attention to the following points in Babington's original description in *Synopsis of British Rubi* (1846), page 10, and in Salter's description in Hooker and Arnott's *British Flora* (1850), page 585. All these points, except as to flowers, I have verified on growing plants in Apse Castle Wood.

Babington, *l.c.* Stem long, furrowed, green. Prickles few and small. Terminal leaflets oval, slightly narrowed below, acute, shortly pointed. Stipules linear-lanceolate. Basal leaflets shortly stalked. Flowering branch pubescent with lax hairs, not setose, prickles few. Sepals woolly, closely embracing the oblong fruit. Petals oblanceolate. A very straggling plant, prostrate unless supported or much shaded by trees; remarkably distinct from all its allies.

Salter, *l.c.* Whole plant green, spreading abundantly by creeping stolons as well as rooting at the end of the stems. Petals small, white. Calyx embracing the fruit.

I myself found the green stems standing up unbranched to the height of 5-8 feet, defoliated all but for a few recent leaves near the tip. Similar stems were to be found rising up singly a short distance away. A few stems, borne down apparently by the weight of the leaves in the previous autumn, had rooted at their tip.

Evidently this bramble belongs to the *Suberecti*. How then is the subsequent confusion to be accounted for? Babington informs us that a bramble gathered near Twycross, Leicestershire, by Lees and Bloxam is also " a probable var. of *R. Salteri*," and goes on to give the points of difference, viz., that the stipules are linear, the flowering branch leaves ashy beneath, the petioles and midribs furnished with stronger and more numerous prickles, the flowering branch and panicle rachis armed with strong hooked prickles, and the panicle branches mostly axillary and corymbose.

I have seen a specimen from Stanton Harold, Leicestershire, labelled by Bloxam as *R. Salteri*, which may possibly be the same as the bramble gathered by him near Twycross and determined by Babington as a probable var. of *R. Salteri*. This Stanton Harold specimen—so far as one may judge from a specimen in advanced fruit and without collector's notes—is *R. lentiginosus* Lees, not the contracted *horridus*-state which Lees knew, but the lowland *pyramidalis*-state which Focke called *R. cambricus*. Babington himself in *British Rubi*, page 73, appears to record *R. lentiginosus* from Stanton Harold, unless indeed his record is intended to relate to his " *R. affinis*."

This Leicestershire *R. lentiginosus*, then, came to be regarded as a var. of *R. Salteri*, or as *R. Salteri* itself, and from its likeness to *R. calvatus* caused *R. Salteri* to be associated with that species—but not by Bloxam, who seems to have known *R. calvatus* and *R. lentiginosus* too well to acquiesce in the arrangement.

Under his account of *R. Salteri* Babington relates that Lange sent him a bramble from the woods of Fionia, which Babington thought "almost exactly the *R. calvatus* of Bloxam." I have no doubt that this bramble was really *R. sciaphilus* Lange, which is frequent in the woods of Fionia. The same bramble was gathered by Rogers near Alexandra Park, St Leonards-on-Sea, E. Sussex, "in immense quantity," on 19th August 1897, and was at first labelled by him "*R. lentiginosus* Lees or allied form," which was subsequently in 1901 amended to *Rubus Salteri*. The bramble is unquestionably *R. sciaphilus* Lange, and has the anthers plentifully pilose as in Lange's specimens.

I confess I do not understand Babington's statement at the bottom of page 132 of his *British Rubi* to the effect that he had not seen the typical *R. Salteri* Bab. from any place in Britain except Apse Castle Wood. A few lines above that statement he says that a bramble gathered in South Devon "exactly resembles the original *R. Salteri* from Apse Castle Wood." I think that the bramble from Muckross, near Killarney, S. Kerry, which he records as *R. Salteri*, is the Apse Castle Wood bramble, too.

R. THYRSIFLORUS Wh. & N.

Last year I was enabled to study a specimen of *R. thyrsiflorus* which had been gathered and determined by Focke. I found that this German bramble was identical with an undetermined bramble which I have known for six or seven years past on Putney Heath, Surrey, between Roehampton village and the reservoir on Putney Heath. In 1929, in company with Mr Pugsley, I saw the same bramble in a fresh station below the lower end of one of the bogs on the western slope of Wimbledon Common. I have not seen it elsewhere, nor seen a dried British specimen other than my own from the above stations.

It will be recollected that Focke aroused some controversy by claiming in his treatment of the brambles in Ascherson and Graebner's *Flora of Central Europe* that *R. Bloxamii* was the same as *R. thyrsiflorus*. Rogers and Linton replied that after the fullest consideration they were disposed to retain the name *R. Bloxamii* for our British bramble, and to regard *R. thyrsiflorus* as still unknown in the British Isles. Focke did not change his view in his final Monograph of the brambles. I fully agree with Rogers and Linton that the two brambles are not the same. *R. thyrsiflorus* has a short cylindrical panicle furnished below with large leaves composed of broad and short-pointed leaflets. The stem leaves also are unusually large, the leaflets broad and imbricate and acuminate, and cordate ovate in shape.

R. SPINULIFER M. & L.

I identify as this a pink-flowered bramble which I find on Bostall Heath and in Bexley Wood, in N.W. Kent. The stem is thinly hairy, passes from green to reddish brown, is low-arched then procumbent, forming a bush about two feet high. The stem prickles are very numerous, slender, from a swollen more or less conical base. Although the bramble is classified by Boulay and Sudre as a subspecies of *R. Koehleri* the stalked glands are considerably shorter than in that species. The terminal leaflets are oval or obovate with a nearly entire base, the dentition is more compound than in *R. Koehleri*, with the principal teeth more prominent and repand. The most marked feature of the panicle is the long and sharply ascending lower panicle branches, armed with numerous equal patent acicular prickles. As on the stem the stalked glands are rather short. The rachis is pubescent and bears many fine pricklets and sunken glands. The terminal leaflets of the upper leaves are obovate-rhomboid, and of the lowermost leaves nearly round and obtuse. The calyx is greenish-grey felted, finely aciculate and dotted with short-stalked glands. The calyx segments are conspicuously white margined, very white within, and end in long slender tips; they are reflexed after flowering. The petals are obovate, much tapered to the base, notched at the apex, becoming divaricate with their sides reflexed. The fruit is rather large, subglobose, and is composed of large equal drupelets. The stamens are white and much exceed the green styles. Young carpels pilose.

I have this bramble under cultivation and am much impressed by its distinctness from *R. Koehleri*. The latter, as known to me in Epping Forest, has small white flowers with red styles, and has a more elongate and more hairy panicle, furnished with longer stalked glands and more numerous long acicles. I doubt, therefore, whether the association with *R. Koehleri* can be maintained.

I have seen *R. spinulifer* also from Badby Wood, Northants, in *Hb. Druce*, and Sudre gives it for Herefordshire on the authority apparently of No. 127 of the *Set of British Rubi*.

R. SCANICUS Areschoug.

Last summer I revisited Netley Heath and found this bramble over an area of perhaps a square mile almost the most frequent form. It had recovered its vigour, and specimens were obtainable which compared well with Swedish examples. I have come across a specimen which is certainly this bramble, collected here by Mr C. E. Britton in 1900. The ticket reads "*R. pyramidalis* Kalt. I think *R. pyramidalis* Kalt. though the panicle is hardly typical. November 1900, W.M.R."

R. NITIDIOIDES W. Watson.

Sussex can now be added to the counties in which this bramble is known to grow. I saw it last summer beside a stream a little to the north of Frant, East Sussex. On Wimbledon Common there is a small form which is, I think, not starved but a genetic form. It is particularly easy to mistake this small form for *R. nitidus*. Dr Gilbert collected it near Eridge, East Sussex, as *R. nitidus*.

R. LARGIFICUS W. Watson.

This is frequent on Rusthall Common, near Tunbridge Wells, West Kent, but always with the stamens a little longer than the styles. It has hitherto been known only from a few localities in N.W. Kent.

R. ARGENTEUS Wh. & N.

To English and to German bramble students this bramble seems to have been always a stumbling-block. Focke believed that he had refound Weihe's type in the neighbourhood of the original locality at Minden. The bramble which he found (only a single bush) he described as being of immense proportions, nearly completely infertile, glandular, certainly of hybrid origin from *R. rhombifolius* (a green-leaved species) crossed with *R. Sprengelii* or *R. infestus* (both green-leaved) or with *R. rudis* (slightly discolorous-leaved). It is difficult to imagine how Focke came to think that this was the plant described and figured by Weihe and Nees as *R. argenteus*, which has silvery-white felted leaves, is quite fertile and has no long-stalked glands. By the time Focke wrote his description of *R. argenteus* in Ascherson and Graebner's Flora he had seen what he believed to be *R. argenteus* from England and also from other places in Germany and Belgium, and his description is apparently drawn up to cover those plants. It is, I think, seriously at variance with Weihe and Nees' very full description and with their figure. In his last Monograph his description is modified, and it is stated that Weihe and Nees' type has not been found for certain in any place in Germany besides the original station at Minden.

It is otherwise, I think, with Sudre's description and plate; they do agree with Weihe and Nees' description, read in its entirety, the preliminary as well as the major description. The chief points about the bramble are, it seems to me, as follows:—

The stem is obsoletely hairy, more or less furrowed, and armed with strong, equal, recurved prickles, unaccompanied with pricklets or stalked glands. The leaflets are all long-pointed and are entire at the base. The stipules are without stalked glands. The leaflets again are more or less doubly, deeply, closely, sharply, moderately-coarsely serrate; deep green and glabrous, or glabrescent above, and rather closely silvery-white felted and pubescent beneath.

The long flowering branch is densely pubescent and felted, and is armed with rather small, slightly falcate prickles. The leaves are more coarsely toothed than on the stem, and graduate into simple ovate, then lanceolate and linear-lanceolate leaves up to the top of the panicle. The panicle is cylindrical above, from a pyramidal base when well developed, the upper branches ascending, 1-2 (3)-flowered. The pedicels are furnished with small hooked prickles. The calyx segments are aciculate, long-pointed, patent as the petals fall, later reflexed. The petals are pink, bleaching to white, large oblong, abruptly clawed. The stamens are short, hardly exceeding the green styles. The young carpels are glabrous. The fruit is large and is freely produced.

Weihe and Nees place *R. argenteus* in a section headed "Mit behaartem aber weder bereiftem noch drüsigem Blatterstengel." After describing the stem prickles they say, "Feinere Spitzen findet man nicht zwischen ihnen." Of the pedicels and calyx they say, "Die Blumenstielchen und Kelche weissfilzig, mit unterlaufenden Drüschen." The reference is here to sunken, sessile or subsessile glandules, not to stalked glands. Weihe and Nees always speak of stalked glands as " Drusen " or " gestielte Drusen," never as " Drüschen."

I think I have seen this bramble from Sussex and from Devon. It is preferable to see it in flower, and I have seen it only in fruit. Although, therefore, I cannot assert positively that we have Weihe and Nees' bramble in England, I am hopeful that it will be met with again and that it will be possible then to recognise it for certain.

I will now deal with the brambles which in England have been considered to be *R. argenteus* W. & N.

R. DIVERSIARMATUS sp. nov.

This is the bramble made known by Fry and White from Woollard and Brislington in N. Somerset and called *R. erythrinus* var. *argenteus* Wh. & N. See *Journ. Bot.*, 1892, page 11, and Murray's *Fl. Som.*, pages 106 and 415. Sudre wished to call it *R. argenteus* var. *longicuspidatus*.

It differs from *R. argenteus* in the hairy stem bearing pricklets, acicles and long-stalked glands amongst the prickles. The petioles and stipules also have stalked glands. The leaves are 3-5-nate pedate, yellowish green above, white felted to yellowish green beneath, with rather long hairs on the veins. The basal leaflets have stalks 3-4 mm. long. The terminal leaflet is oval-obovate, the base entire or emarginate, the point very long. The serrature is somewhat double.

The flowering branch is bright red, angled, flexuous and very hairy, and is furnished with conspicuous stalked glands and acicles. The panicle is long, broadly cylindrical, leafy to the top, with long widely ascending branches below, usually four inches or so in length but occasionally developing into long leafy secondary panicles. Pedicels about one inch in length, armed with straight prickles. The flowers are large, the petals pale pink, the stamens white (reddening) about as long as the green styles. The young carpels are glabrous, the receptacle subglabrous.

The very unequal prickles on the stem and panicle offer perhaps the strongest point of difference from *R. argenteus*, and to my mind prevent the bramble being placed as a variety of that species.

R. CRYPTADENES Sudre.

This is Briggs's Devon *R. erythrinus*, described by him in *Journ. Bot.*, 1890, page 204. A description also appears in the Supplement to *English Botany*. The following notes made from a study of the bramble on Bostall Heath, N.W. Kent, will perhaps bring out the differences between this and the two brambles just dealt with.

Stem glabrous or bearing short clustered hairs here and there. Prickles large and falcate. Leaves 3-5-nate, large, rather thin, glabrous above, grey to green beneath, shortly hairy at first. Terminal leaflet broadly oval or obovate, narrowed to the base, slightly lobate towards the apex, ending in a long—often very long—cuspidate, usually straight and channelled point; the base entire or subcordate; teeth broadly ovate, partly sinuate, open, not incised.

Flowering branch glabrescent below, closely pilose above. Panicle long, leafy and lax; closely armed with strong, declining, falcate and hooked prickles. Calyx aciculate and pilose. Petals obovate, entire or notched, pink. Stamens white or pink, much longer than the whitish or pinkish styles. Young carpels each with one or two hairs at first, soon glabrous. Fruit subglobose.

The stipules and bracts are conspicuously fringed with stalked glands, which occur also on the petioles of the leaves on the flowering branch and amongst the hair of the rachis. The leaflets become convex, and occasionally a 6-nate leaf occurs. The petioles and petiolules are often very prickly.

The present bramble, then, is much less hairy and less glandular than the last, the toothing of the leaves is different, and the long stamens are different. It is probably widely distributed: I have seen it from W. Kent, Cornwall, Berks, Cardigan, W. Gloster, N. Devon, N. and S. Somerset, and Oxford. It has been confused with *R. polyanthemus* and *R. calvatus*, as well as with *R. argenteus*.

R. BIPARTITUS Boul. & Bouv.

This is a frequent bramble in some parts of Surrey. I have studied it near Milford, near Newlands Corner, on Farley Heath by Guildford, on Winterfold Heath, in Hurt Wood, and at Witley. In West Kent I have seen it on Rusthall Common, and in East Sussex to the north of Frant towards Tunbridge Wells. I have also seen it near Storridge in Herefordshire. Marshall brought the bramble to the notice of Focke, and received from him the name of R. *erythrinus* Genev. for it, and as such it was issued from Surrey in the *Set of British Rubi*. Another example of the same bramble collected by Marshall from the same neighbourhood was named *R. imbricatus*, I forget whether by Focke or by Rogers, and it is presumably on this gathering that the record of *R. imbricatus* for Surrey in Rogers's *Key* and in his *Handbook*, rests. I have seen a specimen from near Tunbridge Wells, also, which had been identified by Rogers as *R. imbricatus*. This furnished Marshall with his only record of *R. imbricatus* in the *Flora of Kent*.

To confuse matters further a specimen of *R. bipartitus* collected by Murray on Shapwick Moor, Somerset, where it had been observed previously by Fry and White, was declared by Focke to be a variety of *R. nemoralis* P. J. M. Under that name it stands in Murray's *Flora of Somerset*, but with a note in the Addenda that Ley would place it under var. *Silurum*. Later Rogers took the view that it was *R. insularis* Areschoug, and it accordingly stands in White's *Flora of Bristol* under *R. villicaulis*, with which Rogers combined *R. insularis*. We are, however, informed by Marshall in his Supplement to Murray's *Flora* that Rogers subsequently agreed with Ley in naming the Shapwick bramble *R. nemoralis* var. *Silurum*.

It might fairly be inferred from all this that a species new to Britain was in question, and in fact when Sudre saw the specimen from Surrey in the *Set of British Rubi* he pronounced it to be *R. bipartitus* Boul. & Bouv. The citation of the name is not without its difficulties as there has been confusion with the bramble in France as in England, but I give the name as I find it in Bouvet's *Florule des Rubus de l'Anjou* (1911-1923). It is there given specific rank—rightly, I think—whereas Sudre makes it a variety of *R. cryptadenes*.

The following description was made from a bush on Winterfold Heath.

Stem crimson on the exposed side, green and glaucous beneath, the growing tip bronze-coloured; the sides sulcate and striate, furnished with short clustered hairs at first and subsessile glands, becoming glabrous. Prickles patent, declining and falcate; slender, moderately long, not very numerous.

Leaves 5-nate, subdigitate, thick, light green, coarsely undulate and rugose; very hairy above and rough; yellowish or greyish white felted and pubescent beneath, with the midrib and secondaries yellow; all leaflets slightly imbricate and subcordate. Petiole flat, pubescent, armed with few prickles, which are large and falcate above, smaller below. Stipules linear-lanceolate, glandular. Terminal leaflet oval, long and finely acuminate, with rather coarse, unequal, sharp teeth, or with double teeth and becoming then nearly lobate. Basal leaflets small, on stalks 2-3 mm. long, long-pointed.

Flowering branch deep crimson (light red and yellow in the shade), thinly pilose to nearly glabrous below, felted and pubescent or rather pilose above; furnished with several 5-nate leaves below, followed first by ternate leaves, of which the terminal leaflets are narrow oblong-obovate and long-pointed, and then by several simple leaves.

Panicle when well developed pyramidal, large, the lower branches long-peduncled, many-flowered, middle branches deeply divided, upper branches dense, 1-2-flowered, patent; terminal flower subsessile. Rachis armed with strong-based but slender prickles, which are sharply declining or falcate, or on strong examples hooked. Scattered short-stalked glands are to be found on the panicle rachis and branches and on the bracteoles. The flower buds are felted and pubescent and sometimes aciculate but not glandular. The calyx segments are loosely reflexed after flowering and in green fruit. Petals rather large, pink, broadly obovate, short-clawed, the apex bifid, notched or only erose, hairy, incurved. Stamens pink-based, longer than the green styles; anthers slightly pilose. Young carpels densely pilose. Quite fertile.

R. imbricatus Hort differs in its small, white flowers, its roundish-obovate terminal leaflets, green, not tomentose beneath, and its narrow cylindrical panicle.

R. OPLOTHYRSUS Sudre.

This bramble is to be found in fair abundance on Littleworth Common, Abrook Common, and Oxshott Heath, in Surrey; and has received various names from our authorities. Specimens from Oxshott Heath have been called *R. rhombifolius*, others from Abrook Common have been called *R. pyramidalis*, and from Littleworth Common *R. argenteus*. As "R. dumnoniensis Bab.," I have seen it from Sussex, Devon, Hants, and Dorset.

Sudre ranges it amongst the species falling in the group of *R. argenteus*, and it will therefore not be out of place to give a description of it here, based on the plants in the Surrey localities quoted.

The stem is dark purple, subglaucous, thinly hairy at first, blunt-angled with flat, striate sides; prickles strong-based, long and lanceolate, mostly patent, hairy. There are no stalked glands nor pricklets.

Leaves 5-nate, subdigitate, strigose above, greyish beneath from a shining pubescence when young. Petiole and petiolules deep purple, armed with large curved prickles, pubescent. Terminal leaflet roundly ovate, acuminate-cuspidate, the points short and broad, the base subcordate; moderately coarsely, irregularly serrate-dentate, with some of the teeth recurved, or more evidently doubly serrate. Stipules slightly glandular. Basal leaflets with 5 mm. stalks.

Flowering branch pubescent and more or less hairy, strongly armed with long and slender, declining or falcate prickles. Panicle pyramidal, mainly ultra-axillary, furnished with 1-3 simple leaves; the middle and upper branches bearing many slender patent prickles, and divided usually more than halfway, 2-4-flowered. Bracts and bracteoles slightly glandular.

Petals roundly obovate, with rather a long claw, pinkish or pink. Stamens white (reddening) much longer than the yellowish green styles. Young carpels thinly hairy: receptacle very hairy. Calyx clothed with a dense coat of short shining hairs, greyish green with a white border to the short-pointed segments. Segments rather loosely reflexed in flower and fruit.

R. ALTERNIFLORUS M. & L.

To come now to "*R. argenteus* f. *glandulosa*"—rather an ambiguous designation since four other *R. argenteus* forms are glandulose—I have recently seen two specimens taken from bushes grown in Sudre's garden at Toulouse from seed of *R. alterniflorus* collected by him at Chateaulin, Finistere. The panicles are weak, and look as if they came from starved bushes, but after allowing for this fact they match our plant very well indeed. They have the same long-stalked glands and acicles on the bracteoles, and long-stalked glands exceeding the short hair on the petioles of the leaves on the flowering branch. The well-advanced carpels are still pilose as in our plant. I was glad to note this point as Sudre says that the carpels are glabrous or scantily pilose, and Bouvet says that they are glabrous.

I do not doubt, therefore, that our bramble, which is so abundant in Surrey, Kent and Sussex, is the same as *R. alterniflorus* M. & L. of the north and north-west of France. I have written a full description of the plant in the *London Naturalist* for 1930.

R. IMBRICATUS var. LONDINENSIS Rogers as "R. NEMORALIS P. J. M."

Rogers seems often to have named specimens of *R. imbricatus* var. *londinensis* as *R. nemoralis* P. J. Muell. That he found some difficulty in separating it from his Branksome Park "*R. nemoralis* P. J. Muell.," *i.e.*, *R. oxyanchus* Sudre, is shown by his remark in the *B.E.C. Report*, 1904, page 16, on specimens sent in from eight Surrey commons, "To some extent perhaps it (*i.e.*, *R. imbricatus* var. *londinensis*) may be said to go off from it (*i.e.*, typical *R. imbricatus* Hort) towards *R. nemoralis* P. J. Muell." From Tooting Common, one of these eight Surrey commons, I have seen a specimen of *R. imbricatus* var. *londinensis* collected in 1904, the year of the note quoted above, on which Rogers reported, "*R. nemoralis* P. J. Muell., a beautiful form with very finely toothed leaves and smaller bracts than in our Hants and Dorset plant." Incidentally, another specimen of the same bramble from Tooting Common was identified by Rogers as *R. macrophyllus* Wh. & N., a bramble the affinities of which with "*R. nemoralis*" are referred to in the *Handbook* under *R. nemoralis.*

The confusion is not limited to examples from the Surrey commons. I have seen specimens of *R. imbricatus* var. *londinensis* from Cornwall which Rogers has named *R. nemoralis*, *e.g.*, one from Perran-ar-worthal and another from Connor Downs, near Hayle. Another specimen of the same bramble from Kea Downs, Cornwall, was determined by Rogers as "*R. Scheutzii* Lindeb., less strongly armed than usual."

The explanation of this confusion of *R. imbricatus* var. *londinensis* with *R. oxyanchus* is, I think, to be found in the fact that both brambles grow in Branksome Park, Dorset, and were both identified as *R. nemoralis.* I have seen specimens of each, gathered there by Rogers and labelled by him as "*R. nemoralis* P. J. Muell."

R. imbricatus var. *londinensis* is then a widespread bramble in the south of England. I know it from S. Essex, Surrey, W. Kent, Dorset, and E. and W. Cornwall. Presumably some of the "*R. nemoralis* P. J. Muell." from other vice-counties—it is given in the *London Catalogue* for 17 vice-counties—will be found to be *R. imbricatus* var. *londinensis.* The bramble named *R. nemoralis* from a field near Four Shire Stone, and claimed in *B.E.C. Report*, 1915, page 339, as a N.C.R. for E. Gloster is, I think, *R. bipartitus.*

Focke was not satisfied that the bramble which he studied in England under Rogers's guidance was *R. nemoralis* Muell. Of this bramble, according to Focke, only one bush was ever known and that is now extinct. In his last Monograph he is very definite that it is Genevier's *R. nemoralis* with which he identified the English bramble. Rogers also in *Journ. Bot.*, 1894, makes it plain that he and Focke thought that the Bournemouth bramble agreed with Genevier's description of *R. nemoralis.* The prickles, leaves and flowers of Genevier's bramble seem to me to differ materially from those of either *R. imbricatus* var. *londinensis* or *R. oxyanchus.* Genevier says that the prickles are robust, falcate or hooked; the leaves deep green, the terminal leaflet suborbicular (which he emphasises by adding that it is rounded); and the petals a bright rose pink, and stamens too. His bramble, therefore, must have been like a *R. Selmeri* with the flowers of *R. rhombifolius* or *R. insularis.*

We should do well to drop the name *R. nemoralis* P. J. Muell. and use *R. oxyanchus* Sudre instead.

The bramble chosen to represent *R. amplificatus* Ed. Lees in the *Set of British Rubi* is not the plant of Lees, nor in my opinion is it a variety of it. The specimens for the *Set* were collected by A. Ley, near Tintern, Mon., and were seen by Focke, who suggested that they represented "perhaps a variety of *R. amplificatus* Lees." Sudre, who seems to have relied largely on the examples in the *Set of British Rubi* for his knowledge of brambles endemic in Britain, described and drew the Tintern plant for his Monograph, yet not without some doubt of its being the true *R. amplificatus*, judging by his warning, "Il est possible que les auteurs anglais aient confondu plusieurs formes sous ce nom. J'ai décrit la plante de *Set of British Rubi*, No. 33."

It is somewhat remarkable that whereas Lees states in the *Phytologist*, vol. iv., p. 823, that *R. amplificatus* occurs in most of the woods about Malvern and Worcester, nevertheless Ley after forty years' brambling in Herefordshire had never met with it (*Journ. Bot.*, 1907, p. 319). Rogers, also, writing in the *Journal of Botany*, 1895, on the list of Rubi in the London Catalogue, ed. 9, owns to being far from satisfied that he yet knows *R. amplificatus.* If reference is made to Babington's *Manual* or his *British Rubi*, it will be seen that his description of *R. amplificatus* is almost verbally identical with the description of *R. Schlechtendalii*, and this latter in turn, he says, is hardly distinguishable from *R. macrophyllus.* The *Handbook* description was apparently written to cover the Tintern bramble as well as Lees' bramble.

I have seen examples of Lees' bramble, collected near Great Malvern and named by him, and I have found it in the north of Herefordshire in a roadside hedge near the Lugg at Aymestry. I have also seen several examples of it from the Midlands, under the names "*R. macrophyllus*" and "*R. Schlechtendalii.*" In these circumstances I have prepared the following description of the Aymestry bramble.

R. AMPLIFICATUS Ed. Lees.

Stem long and trailing, glaucescent, becoming reddish brown, angled, thinly hairy, glabrescent, eglandular. Prickles declining from a large compressed base. Leaves 5-nate, petiole short, petiolules villose. Leaflets shortly strigose above, greyish green felted beneath, velvety, the veins thinly pilose. Terminal leaflet obovate, often much narrowed to the base, with a very long falcate point and irregular, or nearly double, serrate-dentate, partly patent teeth; 3-4 times as long as its stalk.

Panicle often very large and with long lower branches, but if not large, then cylindrical with short erect lower branches; bearing large 3-5-nate leaves with very long-pointed leaflets, and often simple leaves to the apex. Rachis angled, densely villose, eglandular, armed below with unequal strong-based falcate or declining prickles, and above with small acicular prickles. Middle and upper panicle branches divided deeply, and when strong, completely to the base. Pedicels with numerous acicular prickles.

Buds greenish grey felted and pubescent, shortly aciculate. Calyx segments white-margined, ovate-lanceolate, prolonged into linear tips, loosely reflexed in fruit. Petals pinkish in bud, white when expanded, rather large, oval, pointed and clawed. Stamens white, far exceeding the greenish styles. Anthers glabrous. Young carpels glabrous or nearly glabrous. Receptacle pilose, the hairs often protruding between the young carpels.

Lees at one time, like Babington, regarded his bramble as closely related to *R. macrophyllus* (by which however according to his description in *Phyt.*, 1853, he apparently meant *R. pubescens* var. *subinermis* Rogers), but afterwards thought it quite distinct. Bloxam's suggestion that it was *R. vulgaris* Weihe & Nees is very interesting, as it certainly recalls that bramble in several respects. But its nearest ally is, in my opinion, *R. dumnoniensis* Bab., with which it should stand in the *Villicaules* group.

R. LASIOCARPUS nov. sp.

From Lees' bramble just described the Tintern bramble, No. 33 of the *Set of British Rubi*, differs considerably. The stem is rather more sharply angled and more glaucous. The prickles are more slender and longer, some are patent and some declining. The leaves are distinctly small, the leaflets doubly incise-serrate, the principal teeth pointing forwards not outwards. There is a trace of stellulate hairs over the under surface of the leaflets, and the veins are conspicuously pilose. The leaves are harsh to the touch beneath. The panicle varies from cylindrical to pyramidal, and in either case is leafy to the summit. The flowering branch below the panicle is only thinly hairy, but the upper parts of the panicle are clothed with dense hairs. The rachis and branches of the panicle, and the pedicels and calyces are extremely prickly. The middle branches of the panicle are divided to the base usually, as in *R. amplificatus*. The calyx is more hairy than in *R. amplificatus* and is patent in fruit. The young carpels are very densely pilose.

R. HYLONOMUS M. & L.

R. hirtus b. *Menkei*. Mount Nod, near Tunbridge Wells, Mr Borrer —Bab. *Syn. Brit. Rubi*, p. 29 (1846), and *Manual*, ed. 2 and 4. *R. pygmaeus* Weihe—Syme in *English Botany*, iii. (1864); and Bab. *Brit. Rubi* (1869), p. 181. Mount Nod and Eridge, near Tunbridge Wells, Oxhey Wood, Watford, Herts, and Pinner Wood, Middlesex. *R. praeruptorum* Boulay—Bab. in *Manual*, ed. 8. South-eastern counties.

The foregoing references relate to a bramble once apparently well known to Borrer and Babington. It is not the Dorset bramble issued in the *Set of British Rubi* as *R. praeruptorum* Boulay, and described by Rogers under that name in his *Essay*. Last summer I met with Borrer's bramble in fair quantity on Rusthall Common, near Tunbridge Wells, West Kent, and between Tunbridge Wells and Eridge in E. Sussex.

It is unnecessary to describe the bramble afresh as the description by Babington is adequate for its identification, but it should be noted that Babington's " Anthers purple. Styles greenish," should read " Anthers greenish. Styles purple." *R. hylonomus* L. & M. in P. J. Muller's *Versuch* (in *Pollichia*, 1859), p. 224, is the same bramble, and Babington's names being incorrect that is the name by which it must be known. It is common to the south-east of England and the north-east of France.

R. hylonomus belongs to the *R. serpens* group. Borrer therefore correctly indicated its approximate position in assigning it to *R. hirtus*, and Babington erred in removing it to the *Radulae*.

R. BADIUS Focke.

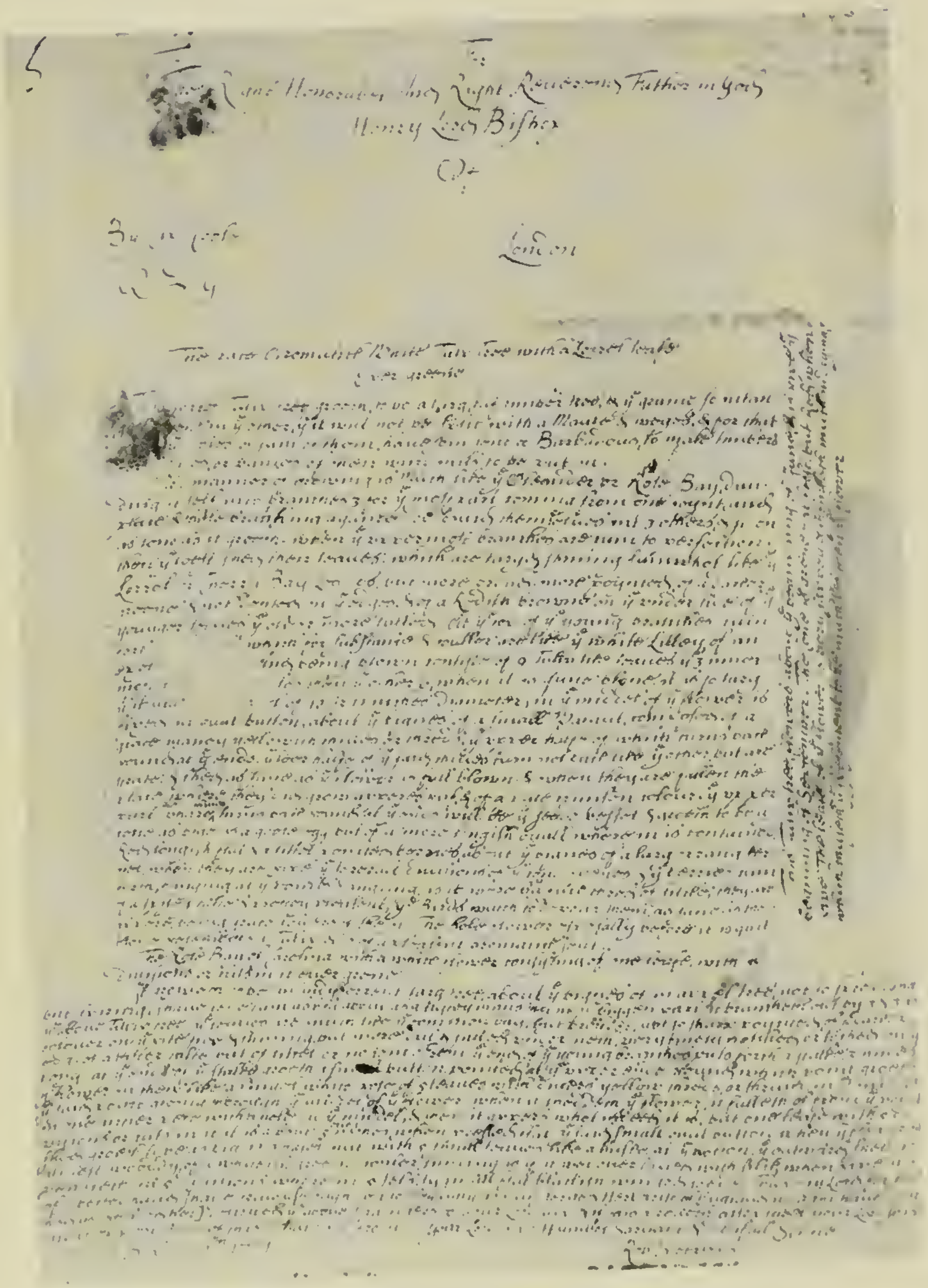
In dealing with the brambles of Central Europe in Ascherson and Graebner's *Flora* Focke states that he has seen a dried example from England apparently belonging to *R. badius*. A specimen which came to me recently from Dr Druce, collected at Langworth Wood, near Lincoln, 10th August 1907, and provisionally named " *R. infestus* (probably)," agrees well with the descriptions of Focke and Friderichsen, and matches a German specimen which I have seen, collected at Brunswick. On the Continent *R. badius* is found in Holstein, in N.W. Germany, and in the lower Rhineland. It is not surprising, therefore, that it should grow in the east of England.

In general appearance it recalls *R. pyramidalis*, especially in the colour of the stem, in the prickles, in the leaf-toothing, and in the long-stalked glands. On the other hand the subsessile basal leaflets, the imbricate leaflets, the (sometimes) broad stipules, and the rising fruit calyx might suggest a relationship with the *Corylifolii*. Focke, like Friderichsen, once placed it in the *Apiculati*, but in his last work it stands among the *Grandifolii*.

The stem is low-arching at the base, then prostrate, brown to crimson, bluntly angled, thinly hairy, sometimes bearing unequal stalked glands and stout-based pricklets above. Prickles broad- or narrow-based, straight, very slender, equal, patent or nearly patent. Leaves 3-5-nate, green beneath and hairy on the veins. Petiole with long straight prickles; the stipules narrow linear-lanceolate, sometimes broader. Leaflets imbricate, margin with unequal, and in part patent, serrate teeth. Basal leaflets shortly stalked or sessile. Terminal leaflet ovate-elliptical or suborbicular, with a subcordate base and a short point. Intermediate and basal leaflets acute.

Panicle rather long, lax and ample, pyramidal, with nearly horizontal upper, and long many-flowered ascending lower branches, clothed with loose patent hair and rather numerous or only a few long-stalked glands. Panicle prickles long slender straight, patent or more or less declining. Calyx bearing many long straight aciclcs and long-stalked glands, the segments ending in long linear points, patent in fruit. Petals large, elliptical-obovate, rose-red. Stamens pink, exceeding the styles. Anthers pilose. Fruit subglobose.

BRIT. MUS. (N.H.)
BOTANY



LETTER RELATING TO MAGNOLIA GRANDIFLORA L.

R. MUTABILIS var. REGNORUM nov. var.

In S.W. Surrey and N.W. Sussex there is a bramble which has generally not been distinguished from *R. mutabilis* Genev. I do not mean *R. glareosus*, which was included under *R. mutabilis* in the *Handbook*, nor *R. mutabilis* var. *Naldrettii* which White separated from the type; but another bramble. On several occasions I have examined it at Witley and at Farley Green in Surrey, and I have seen dried specimens, all named *R. mutabilis* Genev., collected by Marshall at various stations in S.W. Surrey, viz., Dunsfold Common; Barnacle Hill, Witley; pondside, Witley; roadside hedge near Lea Park, Witley; and roadside hedge near Charles Hill, Tilford. I have seen one Sussex example, collected by F. A. Rogers near Lynch, W. Sussex, 5th August 1914, and named *R. mutabilis.*

The earliest example is labelled as follows:—"Pondside, Witley, Surrey. 25/6/90. 24/9/90. Petals large and showy, nearly white, narrow and far apart. White filaments far exceeding the whitish styles. Stem prostrate. *R. mutabilis* Genev. confirmed by Babington. E.S.M." "I agree.—W. MOYLE ROGERS."

R. mutabilis Genev., according to Sudre and Bouvet, has the stem nearly glabrous, terminal leaflets broad, and carpels glabrous. From this the Surrey and Sussex bramble referred to above differs in its markedly hairy stem, narrow terminal leaflets, and very pilose carpels.

The Bucks "*R. mutabilis*" is, I think, white-flowered *R. apiculatus* Weihe.

MAGNOLIA GRANDIFLORA L.

The letter reproduced on the opposite page was sent in 1701 to an English Botanist, and may be of some interest to our American colleagues. It was written by Robert Stevens of Carolina, and sent to Henry Compton, once Bishop of Oxford and then of London, a brother of the second Earl Compton. He was born at that lovely house, Compton Wyniates, Warwickshire, the seat of the Marquis of Northampton, and died at Fulham at the ripe age of 81. He was a great gardener, introducing into England many exotics. These include *Crataegus coccinea*, *Cornus sericea*, *Aralia spinosa*, *Spiraea opulifolia*, *Quercus coccinea*, *Gleditschia triacantha*, and in 1688 *Magnolia glauca* and *longifolia* (now made synonymous in "Index Kewensis"), all North American species. The specimen accompanying the letter was *M. grandiflora*, a handsome tree which produces flowers twelve inches across. It is known in America as Bull Bay, and is excellently figured by Sargent in his "Sylva."

THE BRITISH WHITE WATERLILY, NYMPHAEA ALBA L.

J. Gordon Dalgliesh, F.L.S.

Some botanists have expressed doubts as to *Nymphaea alba* being indigenous to Great Britain, for the plant has for so long been extensively cultivated and crossed with closely allied species or forms that it is impossible to trace the parentage of those found growing on ornamental waters. In almost every case these have at some time been introduced and are not truly wild. Unlike *Nuphar*, *Nymphaea alba* and its allies ripen their fruit under water, so the idea of seeds being conveyed through the agency of waterfowl is not feasible. *Nuphar lutea*, on the other hand, ripens its fruit above water, the pericarp splitting and scattering the seeds, these (being comparatively large and conspicuous, are attractive to waterfowl) remaining floating for some time on the surface. Moorhens have frequently been observed to eagerly devour them, and the testa, being hard, possibly survives the process of digestion, passing out uninjured. During the latter part of August 1927, the writer placed some seeds of *Nuphar lutea* in a glass vessel, where they remained floating for over three days.

NYMPHAEA ALBA L.

The type that Linnaeus based his description on may possibly have been *Nymphaea candida* Presl, which has not always been recognised, or, if so, it has been regarded as merely a variety of *Nymphaea alba*. Linnaeus does not appear to have ever referred to it, although the plant grows in Scandinavia. Presl distinguished *Nymphaea candida* from *alba* chiefly on account of the absence of stamens from the summit of the ovary. According to Conard (*The Waterlilies*, 1905) *Nymphaea alba* × *candida* occurs in East Prussia at Neuhausen, near Konisberg, near Goldapand and elsewhere. Sernander in 1894 claimed to have discovered a red variety of *Nymphaea candida* in Fagertärn, Sweden. Several varieties or sub-species of *Nymphaea alba* have been described by Continental authors on apparently very trivial grounds, thus causing much confusion. It is more than likely that a thorough and careful revision of these so-called varieties would bring conviction that these are but mere states due to natural local conditions. The Continental school has sub-divided *Nymphaea alba* into at least ten varieties, sub-species, and even species. Hentze appears to be the chief offender in this respect. The following is a synonymy:—

Nymphaea alba melocarpa Caspary, 1855, changing in 1863 to *N. alba polystigma*.
Nymphaea aesophii Boissier, 1888.
Nymphaea Dioscoridis Helder, 1885.
Hentze from 1848 to 1852 gave *Nymphaea venusta*, *rotundifolia*, *erythrocarpa*, *parviflora*, *splendens*, and *urceolata*.
Gave in 1892 had *Nymphaea alba*, var. *intermedia*.

In 1806 Salisbury broke away from *Nymphaea*, substituting *Castalia*, but Conard has tried to show that the name *Nymphaea* must be retained for what he styles the *Eu-Castalia* group and the old name *Nuphar* (*Nymphozanthus*) must stand for the yellow pond lilies (*Botanical Gazette*, January 1917). Hentze's typical *Nymphaea alba* was based on specimens from Upsala and his *erythrocarpa* was so named on account of the red tissues in the interior of the fruit, this type hailing from "Bremerhafen ausdem Lande Hadlen." *Nymphaea parviflora* was based on the smallness of the flowers and *N. aesophii* was recognised by Orphanides by the large size of the flower, the type coming from Macedonia. Yet another, *Nymphaea Dioscoridis*, from Lake Lysimachia in Aetolia, was based on smallness. While this is so, curiously enough, none of the Continental school with their usual zeal for "splitting" and species-making, as might have been expected, raised *Nymphaea alba*, var. *rubra* Lönnroth, to specific rank, all save Carrière (*Nymphaea Caspari*, Rev. Hort. 1880, p. 403) being content to regard it merely as a variety.

The writer has seen in British herbaria specimens of *Nymphaea alba* with pink-flushed flowers. Whether these specimens were truly wild or semi-cultivated could not be determined as the data were insufficient. Conard (*The Waterlilies*) gives the geographical distribution of *N. alba*, var. *rubra*, as Lake Fayer (Fagertärn), in the Parish of Hammar, Nerike, Sweden. *Nymphaea candida* Presl has been divided into no less than thirteen species by the Continental school.

From the foregoing it will be seen under what difficulties present-day workers in taxonomic botany have to contend with in the elucidation of a species.

The geographical distribution of *Nymphaea alba* is given as Europe and North Africa. The writer has examined a small form in the Calcutta Herbarium, labelled *Nymphaea alba*, collected at Deara Dun, N.W. Himalayas, by P. W. Mackinnon. Possibly this specimen is *Nymphaea candida*, var. *kashmirana*, of Hooker and Thomas, and *Nymphaea cachemiriana* of Cambessedes, the original type specimens of this being in the Paris Herbarium. No mention is made, so far as the present writer is aware, of any true *Nymphaea alba* from Eastern Asia. Conard, in his excellent monograph of the genus *Nymphaea*, ignores *Nymphaea alba*, var. *occidentalis* Ostenfeld in *New Phyt.*, 116, 1912, probably because he himself attaches little or no importance to size alone. The above author rightly says:—"It is interesting to note how various observers have been *impressed with different features of the plant* (*i.e.*, *Nymphaea alba*) *as they appear more or less exaggerated in certain localities*." (The italics are the present writer's.)

Herein lies the sole object of this paper and not to add yet more difficulty to the existing supposed species or sub-species into which *Nymphaea alba* has been surrounded in the past, but to endeavour to try and show that the true British White Waterlily may be of smaller size than those found on ornamental waters. It is most important when collecting to bear in mind possible introduction of some of the European forms and also cultivation when specimens from a given locality are open to any such suspicion.

There can be little doubt that *Nymphaea alba* is indigenous to Great Britain—certainly there appears to be no evidence to the contrary—and in the size of its flowers and leaves is intermediate between the large and showy white waterlily of ornamental waters and *Nymphaea occidentalis* Moss. It is in some of those uncultivated and wholly wild tracts of marshland intersected by broad ditches that one quite unexpectedly comes upon a plant that gives rise to those impressions of difference which Conard, as quoted above, says are more or less exaggerated in certain localities. By the eye alone an observer can, after some experience, instinctively distinguish one plant closely allied to another almost at a glance, as for instance between the flat fronds of *Lemna gibba* and the normal ones of *Lemna minor*. Such was the case during the summer of 1927 when, during a botanical ramble in East Sussex, the writer suddenly came upon a small patch of *Nymphaea alba* growing in a wide marsh drain and restricted to one spot only a few yards in length. At once the attention was arrested by the plants *appearing* to be distinctly smaller than the typical forms of the White Waterlily hitherto familiar only on ornamental waters. Not only did the flower alone appear smaller but the leaves also, these moreover showing much more carmine than was usual even when fully matured, for the time of year was August. There were, too, only floating leaves, no aerials. Where these aerial leaves appear this possibly may be due to overcrowding, individual examples being forced out of the water, as is frequently the case in *Hydrocharis Morsus-ranae*.

Nymphaea alba, var. *minor* Ostenf., has small flowers but does not show any very appreciable difference in the leaf to the flower. The East Sussex specimens had, if anything, a smaller leaf than some specimens of *N. alba*, var. *occidentalis* examined. *Nymphaea alba* has been described as having its leaves nearly orbicular, floating, *red when very young* (writer's italics), attaining 300 millimetres in diameter. This reddish or, more strictly speaking, carmine colour was very noticeable even on the adult leaves, but much more so when the locality was visited on April 27th, 1928, for the purpose of studying the spring growth.

Measurements of a plant in August 1927 gave:—Flower, diameter, 101 millimetres; sepals, 47 millimetres in length; outermost petals, 47 millimetres in length; outer stamens, 25 millimetres in length; largest sized leaf, 118 millimetres in diameter.

Nymphaea alba, var. *occidentalis*—Measurements from well-preserved herbarium material from Sweden:—Flower, diameter, 72 millimetres; leaf, diameter, 110 millimetres.

The following questions arise:—

1. Is *Nymphaea alba* indigenous to Great Britain? No writer on botany of the present day would appear to dispute this, so the question can be satisfactorily answered in the affirmative.

2. Are the East Sussex specimens referred to above merely a slightly smaller form differing only in size from the ? cultivated forms of ornamental waters? Possibly this is so and may be due entirely to environment, for the water in the ditches where it grows is not deep, having a depth of about two feet, and environment, that is shallow or deep water, may have an influence on the size.
3. Does *Nymphaea alba* vary in size all over the country and is the flower and leaf large or small indiscriminately, or is this intermediate state (between the lake form and *N. alba*, var. *occidentalis*) confined to certain localities?

This last query can only be ascertained by very careful collecting and recording. Herbarium material is only too frequently insufficiently labelled. The mere place is not sufficient. Exact habitat, nature of growth, etc., should be recorded, or if plants are not collected full notes can be taken on the spot.

The Abbé Pierre Gave, in the *Proceedings Société Dauphinoise pour l'echange des plantes* (Grenoble), 1892, named a Waterlily *Nymphaea alba*, var. *intermedia*, but what this was exactly the writer has been unable to ascertain. No reference is made anywhere else to this form except in Conard's *Monograph of the Waterlilies*, page 176: "*Nymphaea alba*, var. *intermedia* Gave. 1892; fid. original specimen coll. P. Gave, June 30th, 1891, St. Andre, Haute Savoie." The Abbé who was a member of the Société Dauphinoise, died in March 1916. On writing to Kew, the Director replied that there were no specimens of *Nymphaea alba*, var, *intermedia* Gave in the Herbarium there. It would be of great interest to know if the Abbé Gave's types were preserved, and where they are now.

For want of further material and information this paper must for the present necessarily remain unfinished, but the writer is inclined to think that the true White Waterlily growing wild in Great Britain should be known as *Nymphaea alba*, var. *minor* DC.

It may be worth noting here that in the East Sussex marshlands, where *Nymphaea alba* grows, *Nuphar lutea* is not present in the immediate neighbourhood, some miles separating the two species.

The writer is greatly indebted to Dr G. Claridge Druce for much kindly help and criticism in the compilation of this paper.

SOME NOTES ON BRITISH ORCHIDS IN 1930.

P. M. Hall.

The season of 1930, at least in the earlier summer months, was remarkable for a wonderful profusion of blossom, and the Orchids, which are notoriously uncertain in their appearance year by year, for the most part enjoyed a really good season too. So that I thought it might be of value to record the impressions gained in an optimum year when one was able to observe the plants at their best. Practically the whole of the observations were made in Hampshire; the remainder in the counties immediately adjoining.

I was put almost completely out of action for a fortnight in the middle of June by a badly sprained ankle, but this only serves to emphasise the remarkable wealth of Orchidaceae which can be seen in the space of one season within a narrow radius. In spite of the richness of the Hampshire Orchid flora, no less than three new county records were made, so that 1930 was for us an *annus mirabilis*.

I have to acknowledge, with great gratitude, the generous co-operation of many helpers. Among them I may mention Messrs G. W. Pierce, R. M. Synge, E. M. Malan, E. H. White, Rev. R. Quirk, and Miss Pickard, who sent Sussex specimens. In the notes which follow I have tried to make acknowledgment to those responsible for the more important discoveries. All the remaining observations are my own. It can be assumed that wherever Owslebury is referred to, the original finder of the plant in question is Mr Pierce, who has worked out the flora of this district so zealously. The arrangement and nomenclature of genera and species follows the second edition of Druce's *List of British Plants*. I wish to make it quite clear that this has been done for the sake of convenience and not as an implication of acceptance of that arrangement and nomenclature *in toto*. I am fully aware that many of the generic and specific names are still *sub judice* and have no wish to embark upon a nomenclature-war at present.

Malaxis paludosa (L.) Sw.

Rayner's *Supplement to the Flora of Hants* is correct in calling attention to the dwindling of this species in the New Forest. Though far less frequent than it was 20 years ago, it can still be found without great difficulty in many of the New Forest bogs. I formed the impression that it was more numerous in 1930 than in 1929: this was certainly the case at Holmsley.

Listera cordata (L.) Br.

The occurrence of this species near Brockenhurst was recorded in the *Gardener's Chronicle*, 1928, and quoted in *Rep. B.E.C.*, 1929. The discovery was made by a correspondent of Dr Turrill's, but I have failed to obtain any further details. It is a matter of considerable importance to know whether this plant, the correct identification of which is indubitable, occurred in a plantation or on the open moorland under heather. The original station for this plant in Hampshire must always be under grave suspicion on account of its occurrence among planted conifers. Further details as to the plant's occurrence in a new station many miles further east might do much to clear up the status of the plant in Hampshire.

Spiranthes aestivalis (Lam.) Rich.

This plant did not have quite so successful a season as in the year before: 26 flowering plants in the "new" station and 2 in the "old" station as compared with 36 and 5 respectively in 1929. Nevertheless the plant looks robust enough in the new station and, barring accidents, ought to continue to hold its own. This species was commencing to bloom as early as July 5th, when I had the very rare pleasure of showing Mr W. D. Miller a plant new to his experience. I have noticed that the flowering spikes of this species are sometimes imperfect, having been bitten off or damaged in some way. When paying another visit on July 15th I found one of the spikes lying flat on the ground, having been bitten off apparently by a rabbit.

Spiranthes spiralis (L.) C. Koch. (*autumnalis* Rich.).

This species appears to have had its optimum season in 1928 when it was more abundant than I have ever seen it. It was less numerous in 1930 than in 1929 when its occurrence was about normal. My experience of this species in these three years agrees with that of other observers.

Cephalanthera Damasonium (Mill.) Dr. (*pallens* Rich.).

Two abnormal forms of this species were found by me this year: both occurred in a station where this species grew intermingled with the next. I do not think that either of these forms is the result of hybridisation in this case, but this possibility must never be overlooked when two or more Orchids are growing together and abnormalities are found. One plant had some but not all of the flowers monstrous in that they had two labella each and additional perianth segments: otherwise the plant was typical. A similar abnormality is recorded by Camus but appears to be of rare occurrence.

Of the other abnormal form there were two plants; these differed from the type in having the leaves rather narrower but the principal feature was that the flowers entirely lacked the rich orange-coloured markings on the epichile. I can find no reference to the occurrence of such a form elsewhere. At first I thought these plants might be hybrids on account of the narrower leaves, but abandoned this idea later as I could find no trace of structural difference from the type. Also both supposed parents have the orange markings (though not identical in each case) and there seems no reason why a hybrid offspring should be devoid of markings. A hybrid between these two species is known on the Continent: this is ×*C. Schulzei* Camus. This plant is illustrated on Plate 132 of the *Iconographie*, and the flower is shown wholly white but the letterpress makes no reference to the absence of the orange lines.

Cephalanthera longifolia (Huds.) Fritsch. (*ensifolia* Rich.).

This species flowered very freely this year in South Hants, and thanks to the guidance of Mr E. H. White I was enabled to see a patch of 40-50 flowering spikes in a beech wood in the Valley of the Meon. Part of this patch has been taken into grounds recently enclosed for the garden of a house, and it is hoped that the trees will not be cleared. Mr R. M. Synge found a patch in a new station at Ashford Chace, near Petersfield, while he and I independently found this species, but not in flower, in Bordean hanger also. These two stations are both in North Hants.

Helleborine leptochila (Godfery) Dr.

This species has hitherto not been recorded from Hampshire but two very distinct forms, one from each vice-county, detected this summer, have been referred to this species by Colonel Godfery. Both forms were abnormal and merit a somewhat detailed description. The first form was discovered by Mr Pierce, who kindly showed it to me immediately *in situ*. About 20-30 very scattered plants were growing in light shade under beeches: the plants were very small and inconspicuous, not more than six inches in height on an average, and wholly green in colour. Though they were clearly related to the self-fertilising *leptochila* group, yet there were very obvious differences and I was unable to assign any name to them. In two or three cases two stems rose from the same rhizome, but in every other case there was only a single stem. Two characters appeared to separate this plant from the published description and illustration:—(1) The epichile was broadly triangular in outline instead of being narrow and tapering, and (2) the flowers instead of being widely opened were hooded and only partly opened. They remained in this state during the whole time of flowering and some in fact never opened at all. I had no previous experience of this group, and as far as I could gather from the published papers, this plant seemed to me to combine characters of *leptochila* and *dunensis*, and I made a mental reservation that it might be the var. *vectensis*, of which it was difficult to obtain a clear impression. An interesting feature of this plant is the length of the flowering period. Mr Pierce first made his discovery early in August and the flowering continued until September 24th. One bloom was observed to be in flower for six weeks.

A specimen was sent to Dr Druce but he was unfortunately away and the flower was withered when he returned. He thought it might be *leptochila*. Mr C. B. Tahourdin very kindly interested himself in this plant and independently suggested that it might prove to be *vectensis*. He was good enough to give me much useful information concerning *leptochila* and the original discovery of *vectensis*. One specimen was preserved in pickle and later shown to Colonel Godfery, who unhesitatingly pronounced it to be a starved form of *leptochila*, with the possibility that it might correspond with the form named *vectensis*.

There is therefore a distinct possibility that this plant may prove to be var. *vectensis*, but this cannot be decided without further study. At first sight this plant certainly seems to have considerable differences from type *leptochila*, and it may merit being given a varietal rank either under the name of *vectensis* or some other.

The other form was found by R. M. Synge in Northants in a well patronised locality where one would have thought nothing new could lurk hidden. One plant only was found at first, but on a subsequent visit I was able to find another plant with three flowering stems—the first plant had one stem only. This was a weak rather decumbent plant with pale whitish green widely-opened flowers very different in appearance to Mr Pierce's form. The feature of the plant was that all the segments of the flower were narrow and tapering and that the labella instead of being divided into hypochile and epichile, as is normal in this genus, consisted of a simple segment similar to the others, the hypochile merely being marked by a shallow longitudinal groove. I could find no record of any peloriate *Helleborine* in the text books but decided that this must be a peloriate form probably of *leptochila*, and this diagnosis was subsequently confirmed by Colonel Godfery. The remarkable thing about this form is this: the second plant with three stems found by me was about 200 yards away from the first plant found by Synge: both were absolutely identical in their peloriate form and no normally formed *leptochila* were seen at all in this station. Both *H. Helleborine* (L.) Dr. (=*latifolia* Dr.) and *H. purpurata* (Sm.) Dr. occurred near this form, but it was obviously distinct from both of these and Colonel Godfery had no doubt that it belonged to *leptochila* on account of the form of the column.

Orchis Simia Lam.

This plant was visited in its sole remaining British station and found to be in sadly reduced circumstances since my last previous visit in 1914; then there were some sixty blooms to be seen as against 12 in 1930. I happened to observe that on these 12 plants only one individual blossom had its anthers removed: unfortunately I did not count the total number of blossoms but it is certain that they would average not less than 8 per head, so that it would seem that one per cent. or less only of the individual flowers had the anthers removed. This suggests a possible cause for the disappearance of this plant, that it no longer reproduces itself by seed owing to the disappearance of a former insect visitor. It is worth noting that Darwin, in " Fertilisation of Orchids," refers to the imperfect fertilisation of both *Oo. fusca* (*purpurea*) and *militaris*, two species closely allied to *Simia*, one of which is practically extinct in Britain while the other is much diminished in numbers. *O. ustulata*, another allied species, is also in my opinion diminishing. In this case nurserymen may be partly to blame. In the words of Darwin, written nearly 60 years ago, " from these facts the suspicion naturally arises that *O. fusca* is so rare a species in Britain from not being sufficiently attractive to insects, and to its not producing a sufficiency of seeds." The same would no doubt apply to *Simia*, and in these days there is no harm in bringing to notice anything which may help to exonerate collectors of the charges freely levelled against them.

Orchis latifolia L.

My views on the occurrence of this species in Britain have been expressed quite recently in a letter to Mr H. Cary Gilson which he was good enough to print in his excellent little monograph, "The British Palmate Orchids," published under the auspices of the Winchester College Natural History Society. Briefly let me say that I have seen nothing in 1930 to make me change those views. The evidence for the occurrence of *O. latifolia* L. is sufficiently strong to convince such eminent authorities as Colonel Godfery, Dr Stephenson and Dr Heslop-Harrison and they and those who follow them recognise *latifolia* and hybrids of *latifolia* with other species from localities in Hampshire. I can only say that in my experience, which is practically limited to the Hampshire localities, but extensive within those limits, I have yet to see any situation which suggests to me the presence of *latifolia*. Near Winchester, plants have been pointed out to me as *latifolia* or hybrids of *latifolia* but in every case *Oo. maculata* L. (agg.) and *praetermissa* Dr. were also present and the presence of these two plants was sufficient to explain adequately every plant found with them. Until I find a situation inexplicable without *latifolia*, I see no necessity for postulating a third species where two will suffice.

O. incarnata L.

This species was exceptionally luxuriant in 1930. In some of the water meadows of the River Meon, near Wickham, this species was in greater plenty than I have ever seen it, and was the predominating Orchid, even outnumbering *Oo. praetermissa* Dr. and *Fuchsii* Dr. Although this species has only become well understood in quite recent years, I notice that in the *Second Supplement to Topographical Botany* new records have been added only and the comital distribution has not been revised, although many of the records for *incarnata* L. in *Topographical Botany* and the *First Supplement* must surely be for *praetermissa* Dr. Before the latter plant was segregated it was called sometimes *incarnata*, sometimes *latifolia*. As an example of a mistake which I think may remain uncorrected in many cases, let me refer to the Isle of Wight for which *incarnata* was recorded in *Topographical Botany* without personal authority. *Praetermissa* certainly occurs here, but the occurrence of *incarnata* is at least doubtful. Mr E. H. White, who knows the Isle of Wight flora very well, says that he has never seen true *incarnata* there, and Mr J. Groves, whom he has consulted, confirms this. *Incarnata*, however, still remains on record for the Isle of Wight. A revision of the distribution of this plant would appear to be advisable. British readers of Camus' *Iconographie* will be surprised at the words,

" fleurit au moins 20 jours *après* l'O. latifolia." It is generally recognised by observers, in the south of England at least, that *incarnata* is the earliest of the palmate Orchids to bloom. Camus also says that in the neighbourhood of Paris, while *latifolia* is apparently a plant principally of basic soils, *incarnata* is often found in marshes overlying chalk or watered by chalk streams, but in Great Britain appears to be missing from the chalk. (Godfery in *Journ. Bot.*, 1918, p. 49.) This is, I think, a misunderstanding. Godfery questions the occurrence of *incarnata* upon the bare chalk Downs. He would not, I am sure, deny that marshes watered by chalk streams are the characteristic locality for *incarnata* in the south of England. As a matter of fact, *incarnata* has been found very rarely as a plant of chalk Downs in the same way as *praetermissa* is found much more commonly.

Var. *pulchrior* Dr.

This is an extremely interesting plant of which I was fortunate enough to have a good deal of experience during 1930. E. M. Malan was kind enough to send me specimens from the New Forest, near Beaulieu Road Station, which clearly belonged to this variety. They were found in full flower and in considerable numbers on May 28th. This date coincides with the flowering time of the type and was puzzling as one of the characteristics of var. *pulchrior* Dr. is stated to be its later time of flowering. Later on, July 5th, I found this plant in Holmsley Bog, and it was then in good flower and by no means over. The affinity of this plant is clearly with *incarnata* L. on account of the upper sepals which are nearly as erect as in the type and the sharply reflexed side lobes of the labellum. The spike is compact and a little less narrow and strict than in the type. The ground colour of the flower is reddish-purple, much as in *praetermissa*, with a pattern of bright crimson lines and dots. A white-flowered form also occurs and at Holmsley this and the purple-flowered form occurred in about equal numbers. I have in my herbarium a specimen collected by R. B. Ullman in Wicken Fen, Cambs., in July 1914, and have also detected a specimen in Mr L. B. Hall's herbarium from the Bourne Valley, near Bournemouth. Mr J. E. Lousley has recently sent me a gathering of this plant from Thursley Common, Surrey, July 11th, 1930. Though very much smaller than the Holmsley specimens, they undoubtedly belong to this variety for which I have not been able to find a previous record for Surrey. Subject to further investigation early July appears to be the normal flowering time for this variety. A possibility with regard to this variety which should not be overlooked is that it may prove to be identical with var. *serotina* Haussk. The description of the latter variety as given by Camus, *Iconog.*, p. 225, makes no reference to the purple colouring, which is a feature of var. *pulchrior* Dr., but otherwise there is nothing in the description and distribution which would appear to make the identification of these two varieties impossible. M. Schulze, *Die Orchidaceen Deutschlands*, etc., 1894 (no pagination!), states that the flowers of this variety are bright purple. Var. *pulchella* Druce is also listed by Camus but with the note—"Douteux." While the status of this variety may be in doubt and possibly also its title to a new name, there can be no doubt of its occurrence and right to recognition as a distinct and remarkable variety. At Holmsley it is associated with an interesting florula consisting of, among other plants, *Malaxis*, *Drosera anglica*, *Carex limosa*, and *Utricularia minor*. Its favourite situation is in sphagnum at the edge of the gutters of water containing the foregoing plants, sheltering beneath a tuft of sedge or Myrica bush. The comparative distribution of this variety and of the type needs working out, but it would appear that the type is a plant of river banks and water meadows, and the variety a plant of sphagnum bogs and stagnant water.

O. incarnata L. × *praetermissa* Dr.

Hybrids, of which *incarnata* is one parent, are distinctly uncommon. One plant referable to the above cross was seen at Wickham this year. Its inflorescence was very long and narrow and the flowers were of a dull pale lilac.

O. praetermissa Dr.

Very luxuriant but quite typical specimens were seen on the landslip below Niton, Isle of Wight, and Miss Pickard also sent specimens from West Sussex. Several specimens were seen of the "Down" form at Cheesefoot Head, near Winchester, and one specimen of the same form on Beacon Hill in the Meon Valley, while near Owslebury a specimen was found in a field which was formerly arable but has not been ploughed for about twenty years. A colony of several plants of *Habenaria virescens* (Sollik) Dr. has also established itself nearby in the same field.

O. maculata L., var. *candidissima* (Weber).

One specimen of this variety was found in Matley Bog, New Forest. When Dr Druce restricted the use of the name *maculata* L. to the plant formerly called *ericetorum* Linton, he proposed the name *leucantha* for the white-flowered variety of this plant. It appears to me advisable to retain the name var. *leucantha* Dr. In the present state of our knowledge of the Continental forms the identification with *candidissima* is purely conjectural. In any case, is not the authority for the *candidissima* Krocker not Weber?

O. Fuchsii Dr.

I find that specimens occur in which the pattern of the lip takes the form of regular loops; so that it is possible to explain the presence of loop patterns in the hybrids without having recourse to *latifolia*, of which a regular loop pattern is said to be characteristic. A regular pattern of loops is also to be found in *O. maculata* L.

Sub-var. *albiflora* Dr.

This name was proposed for the white-flowered form of *Fuchsii* in *Rep. B.E.C.*, 1917, *Supplement*, 167, but seems to have been abandoned by Dr Druce, not appearing in the second edition of *The British*

Plant List. The occurrence of a single specimen near Winchester in 1928 was referred to in my note in *Rep. B.E.C.* for 1928, p. 792. This year a small group of six plants was seen in the same locality. These plants were quite uniform and the flowers of all the plants were small, smaller than those of the average *Fuchsii* type growing all around, but no smaller than those of many of the normally coloured plants. In 1928 Dr Druce identified this plant with *O. O'Kellyi* Dr., but I can still see nothing in it beyond albino *Fuchsii*, and if it is a fact that it cannot be differentiated from *O'Kellyi*, then it seems to me that *O'Kellyi* must be reduced to the status of a var. or sub-var. of *Fuchsii*. With regard to the small size of the flowers, Cary Gilson thinks that the factor of albinism may be linked with a " small flower " factor. This is no more than speculation at present, but is at least a very pertinent suggestion.

COLOUR FORMS.

This may be an appropriate place at which to interpolate a few remarks on the subject of naming colour varieties. In this matter at present there is most complete and lamentable confusion. To take a few examples among the Orchidaceae only from *The British Plant List*: var. *candidissima* of *maculata* L., var. *flavescens* of *Ophrys apifera* Huds. and other colour forms are admitted to the List; yet albino and other colour varieties occur in *Orchis Morio*, *praetermissa*, *Fuchsii*, *mascula* and *pyramidalis* and in *Habenaria Gymnadenia* but are not admitted. This inconsistency is not confined to the Orchidaceae alone. In *Viola* colour varieties are admitted to *odorata*, *hirta* and *sylvestris*, but not to *Riviniana*, *canina* or *palustris*. Numerous other examples might be quoted. In many cases these colour forms are known to be genetically constant and it would appear to be very desirable that colour forms should be treated consistently and either disregarded entirely (as is done by some continental authorities) or recognised by names as variety, sub-variety, or form, as their status may be decided. I would suggest the use of a distinct designation for colour forms if a concise and intelligible term could be found or invented. I do not wish to suggest that the present confusion is confined to *The British Plant List* or indeed to British authorities: the Continental authors are in no better case. Even in Camus' monumental monograph, the " Iconographie des Orchidees d'Europe et du bassin Meditérranean," there is no defined system of dealing with colour forms. For example, we find the following: p. 131. *Anacamptis pyramidalis* Rich. sub-var. *albiflora* F. Major; p. 137, *Traunsteinera globosa* Reichb., forma *albiflora*; p. 180, *Orchis coriophora* L., var. *albiflora* Macchiati. These three albino forms bear exactly the same relationship to their three respective types but are designated by three different terms. This inconsistency is to be found throughout the work. The latest German monographers of the Orchids, Keller and Schlechter, practically ignore all colour variations and are at least self-consistent, designating them all by the term *lusus*. This term does not appeal to me, as *lusus* connotes mere teratological monstrosity which is a different form of phenomenon to albinism and colour-variation.

I suggest that the use of a distinct designation for this type of variation would be very helpful if it did no more than result in a uniform practice.

O. Fuchsii Dr. × *praetermissa* Dr. = × *Mortonii* Dr.

This hybrid occurs wherever the two parents are found growing together, as they so often do. Both grow upon the chalk downs near Winchester in association with *Habenaria Gymnadenia* Dr. and *Ophrys apifera* Huds., and exactly the same association may be seen in a moist meadow near Southwick, S. Hants. In the latter station I obtained this year a complete gradation between the two parents: ringed spots on the leaves and lip patterns of loops were found among the hybrids but these two characters were very rarely combined in one plant. Some specimens were seen which approached one parent much more closely than the other: these would no doubt be F_2 plants or back crosses.

O. pyramidalis L.

Near Owslebury in one station are a considerable number of plants with white flowers (=sub-var. *albiflora*, f. *major*) and an occasional specimen with pale pink flowers. This species was particularly abundant in 1930.

O. hircina Crantz.

A single specimen of this species, cut with hay in a field near Morestead, S. Hants, was recognised by a pupil of Mr Pierce, and is now in my Herbarium. Previous records of this species appear in Rayner's *Supplement to the Flora of Hants*: it has occurred more than once in the Winchester district but only in single specimens.

Aceras anthropophora (L.) Br.

This species was a few years ago regarded as an extreme rarity in Hampshire. While still by no means uncommon, it has been found to be fairly well distributed in the county. The Cheesefoot Head station this year had over twenty flowering plants. Mr Pierce found a single plant in a new station not far from here. Near Exton, in the station recorded in Rayner's *Supplement*, there were quite two or three hundred luxuriant specimens. The Cheesefoot Head and Exton specimens were rather different in appearance, the former being greener, smaller, and very inconspicuous, the latter being much yellower, taller and stouter and far too conspicuous for their own safety. Mr Lousley tells me that he finds two such different forms in Kent and Surrey. Continental authorities recognise several forms, including *flavescens* Zimmerm. and *virescens* Ruppert. Camus says that these forms lack the red edging to the perianth segments. However, this is not lacking in either of the forms which I have seen. The difference between them may prove to be only a matter of age and development.

Mr E. H. White, the original discoverer of the only known station in the Isle of Wight, informs me that 12 plants flowered this year. It had not appeared at all for three years previously apparently owing to close grazing by sheep.

Ophrys sphegodes Mill.

This species has been recorded from North Hants and the Isle of Wight but has not been seen in either vice-county for very many years. The discovery of a single specimen in S. Hants this year will inspire hope that it may re-appear elsewhere. One rather poor but quite unmistakable specimen was found by one of Mr Pierce's pupils on a chalk down. Owing to Mr Pierce's indisposition the specimen was unfortunately picked and taken to him for identification. This species was exceptionally plentiful this year in its Dorset station, and as early as April 27th I found a specimen with five fully opened flowers. Camus retains the name *aranifera* Huds. for this species with the following footnote:—" Sticklers for priority (les prioritaires intransigeants) will adopt the name *O. sphegodes* Mill." If *sphegodes* Mill. is admitted to have priority, there would not appear to be any good reason for adopting any other name.

O. apifera Huds.

This species was extraordinarily abundant in 1930, appearing in meadows and hay fields and all sorts of places where its presence had not been previously suspected.

Var. *flavescens* Rost.

Mr White was kind enough to get me a specimen of this variety from a station near Newport, Isle of Wight, where a considerable colony is known to him. It grows intermingled with this type but according to Mr White flowers 2-3 weeks earlier. I have not seen such a character attributed to this variety elsewhere.

Var. *albida* Garnier & Poulter in vol. i. of the *Annual Hampshire Repository*, published with plate at Winchester, 1799 = var. *intermedia* G. Camus in *Bull. Soc. Bot. Fr.*, xxxviii., p. 42 (date?), and *Iconographie*, p. 234.

This variety differs from the foregoing var. *flavescens* Rost. in having the sepals white but the lip coloured normally as in the type and not greenish-yellow. The plant may be still found at Bordean, N. Hants, whence this variety was originally described. It grows with the type and thus has persisted for more than 130 years, a very striking illustration of the permanence of colour forms. All the white-sepaled plants which I have seen at Bordean have the normally coloured labellum and none the greenish-yellow labellum of var. *flavescens*. If the publication is valid, *albida* would appear to be the earliest varietal name, and should be adopted for this variety.

O. Trollii Heg. & Heer.

In Rayner's *Supplement* the Rev. R. Quirk makes a somewhat surprising statement to the effect that *Trollii* is the predominating form of *apifera* in the neighbourhood of Winchester. This view must, I feel sure, be based upon a misapprehension. The best illustration which I know of *Trollii* is in White's *Bristol Flora*, showing the labellum very long, narrow and tapering. In many places near Winchester there may be seen a modification of *apifera* in which the pouch of the labellum, instead of being perfectly square-ended, has been, as it were, partially unfurled so that the shape of the labellum is that of a truncated cone. While this is certainly a slight modification of the type in the direction of *Trollii*, it is far from attaining the extreme form to which alone the name *Trollii* is applicable. I have examined some hundreds of *apifera* this year, but not one could be called *Trollii*. I feel sure that Mr Quirk must have based his view upon this " pseudo-Trollii."

Camus lists var. *Trollii* Reichb. fil. as a variety of *apifera*, observing that it is probably to be regarded as a monstrosity, showing a partial return to a regular form of flower. Elsewhere Mdlle. A. Camus has made the suggestion that *Trollii* is only a monstrosity or mutation of *apifera* and this certainly accords with the very sporadic appearance of the true plant.

Habenaria Gymnadenia Dr., var. *densiflora* (Wahl.).

In the moist meadow near Southwick, previously referred to, occurred a number of very luxuriant specimens of *H. Gymnadenia*, to which the above name is apparently applicable. Mr Lousley tells me that the Southwick plant matches Swedish examples of this var. very closely. *Densiflora* is said to have a different scent to the type and to have relatively shorter spurs. Some of the Southwick specimens measured 56 cm. in height and it is difficult to see in them more than luxuriant specimens from a moist situation which exceed the type in size, in the same way as the specimens of *O. Fuchsii* growing with them exceed in dimensions the *O. Fuchsii* growing with the typical *Gymnadenia* on the Downs.

Var. *ornithis* G. Camus, Bergon & A. Camus in *Monographie des Orchidées D'Europe*, etc., 1908.

This is the name applicable to the beautiful albino colour-form of *Gymnadenia* which occurs sparingly at Cheesefoot Head. It should strictly be cited as var. *ornithis* (Jacq.) G. Camus, etc., Jacquin having described this plant as *Orchis ornithis* in *Fl. Austr.*, ii., p. 23 (1754). *Leucantha* and *albiflora* are other names which have been applied to this variety.

Habenaria Gymnadenia Dr. × *viridis* (L.) Br. = *Jacksonii* (Quirk) Dr. = × × *Coeloglossogymnadenia Jacksonii* A. Camus *Iconographie*, p. 277.

Five plants of this hybrid were seen this year. In all of them *Gymnadenia* was predominant, but there are undoubted traces of hybridity in this plant, and I think it may be assumed that the parentage originally suggested is correct. Both *Gymnadenia* and *viridis* grow in the immediate vicinity. The second form of this hybrid, which occurs near Winchester but in N. Hants, did not flower this year. The latter form has been named × × *Coeloglossogymnadenia Quirkii* A. Camus, *loc. cit.* Hybrids must of their very nature be variable, and it appears superfluous to name their various forms.

Habenaria Gymnadenia Dr. × *Orchis Fuchsii* Dr. = × × *Orchigymnadenia Heinzeliana* G. Camus *Monograph. Orch. Fr.*, p. 77, vide *Iconog.*, p. 390.

R. M. Synge found an excellent specimen of this hybrid at Cheesefoot Head this year. It was, generally speaking, intermediate between the two parents. The flowers, which were distinctly scented, had darker markings as in *O. Fuchsii*, but the spurs were long and slender, approaching those of *H. Gymnadenia*. There could be no doubt as to the parentage of this plant. Synge's specimen would appear to fall under × × *O. Heinzeliana* G. Camus rather than × × *O. Legrandiana* G. Camus, another form of the same hybrid in which *Gymnadenia* parentage predominates.

Habenaria albida (L.) Br.

This species was recorded for S. Hants in *Rep. B.E.C.*, 1919, p. 681, on the authority of Major Robertson from Chandler's Ford, and this record has been perpetuated in the 2nd Supplement to *Top. Bot.* It is not included in Rayner's *Supplement to Townsend's Flora of Hampshire.* While the occurrence of this plant in Hampshire is not an impossibility, I think the present record should be regarded with grave suspicion until further confirmation is received. Chandler's Ford is a most unlikely place in which to find this species, as the soil of the district is a light sand. Further, I am not able to trace the Major Robertson responsible for the record. Major Malcolm Robertson, of Winchester College, who takes an interest in the Orchids of the neighbourhood, denies any knowledge of the matter. If the record is a genuine one, I hope that these remarks will bring confirmation of it.

The following species were also seen by me in Hampshire in 1930, but presented no unusual features:—*Neottia Nidus-avis* L., *Listera ovata* (L.) Br., *Helleborine palustris* (Mill.) Schrank, *Helleborine* (L.) Dr. and *purpurata* (Sm.) Dr., *Orchis Morio* L. and *mascula* L., *Ophrys muscifera* Huds. *Habenaria viridis* (L.) Br., *virescens* (Zollik) Dr. and *bifolia* (L.) Br.

In addition, though not actually seen by myself in 1930, *Orchis ustulata* L. and *Herminium Monorchis* (L.) Br. also occurred.

BOTANISING IN ALGERIA.

C. D. Chase, M.C., M.A.

The following notes refer to a tour taken with a Leplay party in early April 1930. We landed at Algiers on the afternoon of April 6th after a stormy crossing from Marseilles and only had one day in the capital. I spent it walking round the low amphitheatre of hills on the slopes of which the city is built. The ground, which seemed very fertile, was mostly under cultivation, interspersed with patches of garigue. The flora of the latter seemed to approximate very closely to that of Corsica—*Erica arborea*, *Pistachia lentiscus*, *Cistus monspeliensis* and *Rosmarinus* being prominent. The huge yellow Umbellifer, *Ferula communis*, was very abundant in waste places, sometimes accompanied by *Achyranthes argentea*. The garden of our hotel, the Saint Georges, deserves a special word of praise as it was beautifully kept and thronged with interesting shrubs and flowers. There was a dragon tree, *Dracaena Draco*, and several kinds of *Strelitzia* with masses of *Wistaria* and *Bougainvillaea spectabilis*.

On the 8th, motor-coaches took us over the Atlas range to Bou Saada, situated on the Hauts Plateaux or, as it is sometimes called, the Petit Sahara. The drive through the Atlas was very beautiful but there was no time for botanising. The Hauts Plateaux, a bleak tableland, are not rich in plants, though the Alfa grass, *Stipa tenacissima*, grows there in vast abundance and is an important article of commerce. We saw caravans of camels laden with it. Plants seen in the neighbourhood of Bou Saada and on the way from there to Biskra included *Allium odoratissimum*, *Acanthyllis tragacanthoides*; *Haloxylon articulatum*, a favourite food of the camels; *Stipa parviflora* and *S. tortilis*, *Scorzonera undulata*, a beautiful flower; *Cleome arabica*, a sticky plant with little brown flowers and flat pods, and *Meniocus linifolius*, a Crucifer with a strange distribution, being found in Spain, Algeria and South Russia. Biskra is on the edge of the real Sahara. We found the famous Garden of Allah rather disappointing. It contained many palm trees but few flowering plants—a few *Hibiscus* and *Bougainvillaea*, *voilà tout*. There was, however, a well-grown specimen of *Ficus macrophylla*, sometimes called the Rubber tree. Self-appointed guides of all ages, who stick to tourists like leeches, do not add to the pleasure of a visit to the Garden. There is a certain amount of cultivation around Biskra, as there is around all the oases we visited, and a number of common weeds of cultivation grow there, but the really native plants are few. Most conspicuous among them are those species which the camels, for some reason or other, will not touch. Such are *Peganum harmalà*, with large white flowers; *Euphorbia guyoniana* and *Limoniastrum guyonianum*.

From Biskra to Touggourt, 130 miles, we travelled by the metre gauge railway in a comfortable restaurant train. The line runs through the desert to the oasis of Touggourt, the furthest south point of the railway system. The French occupation of the country is resulting in a great number of artesian wells being sunk and in many thousands of palm trees springing up along this line of railway, where before there was nothing but desert. As is often the case a good many introduced plants have followed this railway, but some real desert plants were also picked at the numerous halts the train made. These included *Echium humile*, *Citrullus colocynthis*, probably the "gall" of the Bible, with a gourd resembling a lemon; *Phelippaea violacea*, two feet high; *Astragalus gombo*, with large yellow flowers; several species of *Tamarix*, *Muricaria prostrata*, a Crucifer with a pod like a miniature battle-axe; *Plantago ovata; Zygophyllum album*, in abundance, as the camels are not partial to it; *Cutandia memphitica*, *Fagonia glutinosa*, *Aristida pungens*, *Cyperus conglomeratus; Henophyton deserti*, a Crucifer with winged fruit; a variety of *Moricandia arvensis*, and a variety of *Salicornia herbacea*. Most of these desert plants have a wide range through the Sahara and Libya as far as Arabia. They can be found, with descriptions, in Post's "Flora of Syria," which includes the Desert of Sinai.

We returned by the same railway to Biskra and then went by coach to Constantine, stopping on the way to visit the Roman ruins of Timgad. Among the ruins were growing *Roemeria hybrida*, *Echium grandiflorum*, *Lithospermum apulum*, *Cynoglossum cheirifolium*; *Schismus marginatus* a very small grass, and a host of other plants. Constantine, built on a hill with deep gorges on three sides, was a famous stronghold in olden times. We spent a whole day wandering about the ravines and steep hillsides. The interesting plants here included *Celsia cretica*, *Erinacea pungens*, *Anagallis linifolia*, *Bellevalia trifoliata*, *Geranium atlanticum* with large flowers, *Convolvulus supinus*, *Ophrys scolopax*, *Fumaria numidica* with white long-stalked flowers, *Centaurea pullata*, *Scrophularia frutescens*, *Sedum coeruleum* and *Erodium hymenodes*.

From Constantine to Tunis was two days' journey by motor coach via Bone and Hamman Meskoutine. The hot springs at the latter place are well worth a visit, though to test the heat of the water it is not necessary to fall into it as one of our party inadvertently did. Near these hot springs the fields were as colourful as an Alpine meadow in June, the massed effects of *Hirschfeldia geniculata* (yellow), *Echium grandiflorum* (red), *Anchusa italica* (blue) and *Convolvulus tricolor* being very striking. Other striking flowers here were *Chlora grandiflora* and *Ornithogalum arabicum*. Soon after crossing the border from Algeria into Tunisia we passed through a large forest of *Quercus Mirbeckii*, a deciduous oak whose down-covered leaves were just opening on April 17th. The Transatlantique have a good hotel in this forest at a place appropriately called Les Chênes.

At Tunis time was found for two most interesting walks, one from Carthage to La Marsa and round Cap Kamart, the second up the mountain, Bou Kornein (1884 feet), ten miles from Tunis across the bay. This is the sacred mountain of the ancient Carthaginians with its two horns. Both for the extensive view from its summit and for the wealth of flowers upon it a walk up this mountain in April is to be recommended. The lower slopes are covered with a thick growth of *Tetraclinis articulata*, a Conifer which, unlike most of its kind, sends out fresh branches when cut. Some of the gnarled and twisted trunks seemed to be of considerable age. This tree has a limited North African range. Among the plants noted on Bou Kornein were the following—*Teucrium Chamaepitys*, *Lavandula multifida*, *Cyclamen persicum*, *Scilla clusii*, *Scorzonera coronopifolia*, *Euphorbia bivonae* and *Tordylium apulum*. The plants here and at La Marsa suggested greater affinities with Sicily and the south of Spain than with those around Algiers. The La Marsa gathering included *Iris juncea*, *I. sisyrynchium*, *Marrubium alysson*, *Retama retam*, *Fagonia cretica*, *Cyperus schoenoides* (on the sand by the sea) and the grasses—*Lygeum spartum*, *Pennisetum asperifolium*, *Festuca coerulescens* and *Avena longiglumis*.

The species mentioned in the above short article are only a few of those seen during our fortnight in North Africa. Altogether between 500 and 600 were noted. Battandier and Trabut give 3316 species in their excellent little Flora of the French possessions in N. Africa. This number includes a good many introduced plants and a number of others which are given specific rank would not be considered more than varieties by most botanists. Perhaps 3000 species would be a fair estimate for the indigenous flora of Algeria and Tunisia. This number is largely owing to the Atlas Mountains. These cease at Tunis. The next great section of N. Africa going eastward—Cyrenaica, Libya and Tripolitanica, *i.e.*, the Italian possessions—has a far poorer flora. The absence of mountains no doubt largely accounts for this. The Flora, edited by Durand and Barrette, of these Italian possessions, includes only about a third of Algeria's 3000. This difference in the vegetation of their two North African empires has perhaps a bearing on the political tension between France and Italy, or at least we may say it points to the underlying causes of that tension.

ADDITIONAL PANSY RECORDS.

E. Drabble.

Since the last list was published (*Rep. B.E.C.*, 1928, pp. 794-800) the undermentioned plants, amongst many others, have been examined. A list of Scottish records also has appeared in the *Transactions and Proceedings of the Botanical Society of Edinburgh* (Vol. xxx., Part III., 1930). For the naming I alone am responsible; the collectors' (or senders') names are given in brackets.

V. agrestis Jord.

Devonshire—Braunton (R. Taylor).
Isle of Wight—Alverstone (E. Drabble and J. W. Long); Freshwater, Godshill, St George's Down, Sandown (E. & H. Drabble).
Hampshire—Lyndhurst (E. Vachell).
Surrey—Witley (G. M. Ash); Pyrford (E. C. Wallace); between Headley and Epsom Downs (J. E. Lousley).
Hertfordshire—Hitchin, Great Wymondley, St Ippolyts (J. E. Little); Letchworth (H. Phillips).
Berkshire--Ravenswood (G. C. Druce).
Buckinghamshire—Hambledon (G. C. Druce).
Cambridgeshire—Cambridge (E. Vachell).
Northamptonshire—Aynhoe (G. C. Druce).
Gloucestershire—Wotton-under-Edge (E. Vachell).
Glamorganshire—St Lythans (E. Vachell).
Lincolnshire—Ancaster (H. Preston); Stamford (S. C. Stow).
Leicestershire—Branston, Cadeby, Kilby, Knipton, Slathern, Thurnby (A. R. Horwood); Newbold Head, Stoughton (W. Bell).
Rutland—Essendine (A. R. Horwood).
Sarnia—Sark (F. Ballard).

V. segetalis Jord.

Kent—Walmer, 1879 (G. C. Druce).
Surrey—Ashtead (E. C. Wallace).
Hertfordshire—Letchworth, Wymondley (H. Phillips).
Northamptonshire—Naseby (A. E. Ellis).
Leicestershire—Ayleston (L. G. Briggs); Stoney Stanton (A. R. Horwood).
Sarnia—Sark (F. Ballard).

V. segetalis Jord., f. obtusifolia (Jord.).

Devonshire—Coffinswell (W. K. Martin); Tiverton (G. Watts); Braunton (R. Taylor).
Surrey—Peaslake (J. W. Mears).
Hertfordshire—Great Wymondley (J. E. Little).

Middlesex—Pinner (W. A. Walkin).
Northamptonshire—Hinton (G. C. Druce).
Pembrokeshire—Tenby (E. S. Todd).
Leicestershire—Market Bosworth (W. Bell).
Nottinghamshire—Rushcliffe (G. C. Druce).
Durham—Harraton (W. J. Fordham).
Perth—Killin (K. D. Little).

V. Deseglisei Jord.

Cornwall—Par (E. Thurston).
Devonshire—Silverton (G. Watts); and f. *subtilis* (Jord.), Braunton (G. Watts).
Somerset—Minehead (E. C. Wallace).
Sussex—Lurgashall (A. J. Burdon).
Kent—Shooters Hill (N. G. Lawson).
Surrey—East Molesey (J. Fraser).
Hertfordshire—Albury, Hitchin, Little Wymondley, St Ippolyts, Tingley Wood (J. E. Little); High Down (G. C. Druce).
Oxfordshire—Witney (E. Vachell).
Norfolk—Burgh St Margaret, Caistor (A. J. Burdon).
Cambridgeshire—Cambridge (E. Vachell).
Gloucestershire—Symond's Yat (G. C. Druce); Cotswold (E. Vachell).
Lincolnshire—West Willoughby (S. C. Stow).
Leicestershire—East Hardwick (P. H. Arundel); Enderby, Mowley Hill, Stathern (A. E. Wade); Swannington (A. R. Horwood).
Cheshire—Alderby (J. Britten).
Yorkshire—Cleveland, Nunthorpe (W. J. Fordham).
Isle of Man—Jurby (C. I. Paton).
Sarnia—Sark (F. Ballard).

V. arvatica Jord.

Hertfordshire—Great Wymondley, Pinches Cross, Pirton, Tingley Wood (J. E. Little).

V. latifolia Drabble.

Devonshire—Saunton (G. C. Druce); Tiverton (G. Watts).
Surrey—Langley Bottom, Epsom (J. E. Lousley).
Hertfordshire—Hitchin (J. E. Little).
Oxfordshire—Oxford (G. C. Druce).
Pembrokeshire—Haverfordwest (A. E. Ellis).
Leicestershire—Lutterworth (W. Bell); Moira (A. R. Horwood); Whetstone (A. F. W. Wade).

V. ruralis Jord.

Somerset—Portishead (E. C. Wallace).
Surrey—Hatchford (E. C. Wallace).
Hertfordshire—Hitchin, St Ippolyts (J. E. Little).
Oxfordshire—Adderbury, Elsfield, Gangsdown Hill (G. C. Druce).

Lincolnshire—Spitalgate, near Grantham (S. C. Stow).
Leicestershire—Birch Hill (W. Bell); Blackbrook (T. Carter).
Yorkshire—Aughton (W. J. Fordham).

V. ANGLICA Drabble.

Devonshire—Hennock (C. E. Larter).
Kent—Walmer, 1879 (G. C. Druce).
Hertfordshire—Tingley Wood (J. E. Little).
Lincolnshire—Saltersford (S. C. Stow).

V. CONTEMPTA Jord.

Hertfordshire—Hitchin, St Ippolyts (J. E. Little); Letchworth, Tring, Welwyn (H. Phillips).
Berkshire—Colman's Moor (G. C. Druce).
Buckinghamshire—Hanslope (H. Phillips); Chesham Vale.
Staffordshire—Gobaldisham Heath (E. Vachell).
Leicestershire—Abberford (P. H. Arundel); Croft (M. G. Whittingham); Morecott Farm Quarry, Wing (A. R. Horwood).
Cheshire—Wallasey (var. *patula* Drabble) (E. & H. Drabble).
Selkirkshire—Selkirk (G. C. Druce).

V. LLOYDI Jord.

Cornwall—Par (E. Thurston).
Somerset—West Monkton (E. S. Marshall).
Buckinghamshire—Castlethorpe, Princes Risborough (H. Phillips).
Denbighshire—Glyndyfrdwy (A. E. Ellis).
Lincolnshire—West Willoughby (S. C. Stow).
Leicestershire—Husbands Bosworth (A. E. Ellis).
Yorkshire—Barmby Moor (W. J. Fordham).
Westmorland—Meathop Moss (T. A. Dymes).
Isle of Man—Jurby (C. I. Paton).
Sutherland—Melvich (E. S. Marshall) (var. *insignis*).

V. LEJEUNEI Jord.

Yorkshire—Cleveland, Newby, Skipworth Common (W. J. Fordham).
Caithness—Killimster (Mrs Wedgwood).

V. VARIATA Jord.

Devonshire—Coffinswell, Milber Down (W. K. Martin).
Sussex—Newtimber (G. C. Druce); Eridge (E. Bray); Wood Guestling (A. G. Young).
Essex—Little Clackton (W. Moss).
Yorkshire—Kiplingcotes (W. J. Fordham).
Cumberland—Melmerby (C. E. Salmon).

V. VARIATA Jord., var. SULPHUREA Drabble.

Devonshire—Coffinswell, Conybeare, Milber Down, Moreton, Hampstead (W. K. Martin).

Suffolk—Bury St Edmunds (E. S. Todd).
Worcestershire—Malvern (H. E. Wilkinson, 1871).
Leicestershire—Ackworth (P. H. Arundel).
Yorkshire—Barmby Moor, Escrick (W. J. Fordham).

V. MONTICOLA Jord.

Cornwall—Land's End. Nanjizal, St Just in Penwith (A. E. Ellis).
Devonshire—Tiverton (G. C. Watts).

V. LEPIDA Jord.

Derbyshire—Froggatt (W. J. Fordham).
Isle of Man—Peel (C. I. Paton).
Stirlingshire—Buchlyvie (R. Mackechnie).

V. LUTEA Huds.

Flintshire—St Asaph (no collector's name, old); Holywell (J. Lambert).

V. LUTEA Huds., f. AMOENA Henslow.

Denbighshire—Berwyn Mountains (A. E. Ellis).
Northumberland—Bardon Hill (M. E. Page).

V. LUTEA Huds., f. SUDETICA Willd.

Perthshire—Killin (K. D. Little).
Aberdeenshire—Ballater (H. H., 1847).

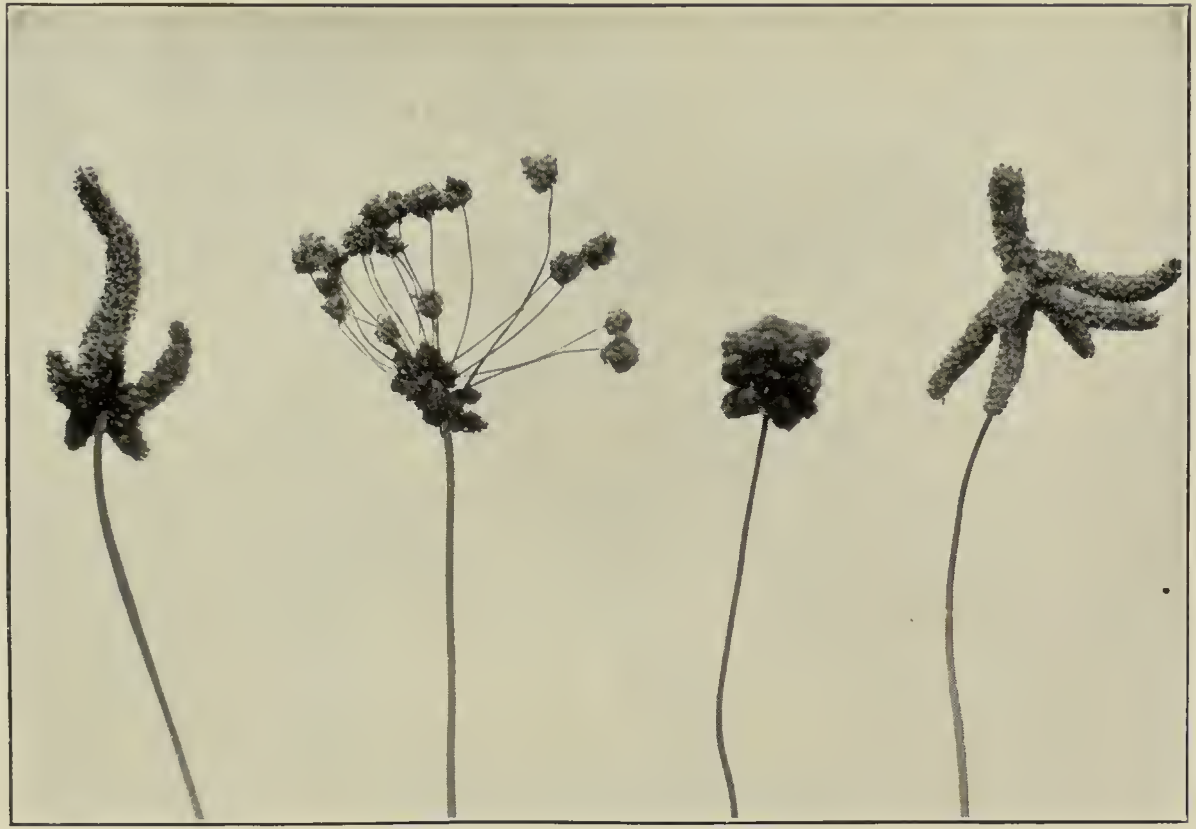
V. CURTISII Forster, f. FOSTERI H. C. Watson.

Norfolk—Thetford (G. C. Druce).
Carmarthenshire—Pembrey Burrows (E. S. Todd).
Pembrokeshire—St David's (A. E. Ellis).
Isle of Man—Ramsey (C. I. Paton).

V. CURTISII Forster, f. PESNEAUI (Ll. & F.).

Glamorganshire—Kenfig (E. Vachell).
Pembrokeshire—St David's (A. E. Ellis).
Cumberland—Haverigg (W. H. Pearsall).
Isle of Man—Arrisdale (C. I. Paton).

BRIT. MUS. (N.H.)
BOTANY



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TERATOLOGICAL FORMS OF PLANTAGO LANCEOLATA L.

TERATOLOGICAL FORMS OF PLANTAGO LANCEOLATA L.

R. J. Flintoff, F.C.S.

In the summer of 1930 a young farmer, Randolf Yeaman, of Allerston, discovered some curious forms of Plantain, a few of which he gathered, and took to Mr James Green, of Thornton Dale, the well-known local naturalist. Mr Green had never seen anything like them, and very kindly sent specimens to me. They were the fruiting spikes of *Plantago lanceolata*, and had been found at Allerston Sandpit, near Pickering. Later, Mr Green discovered similar growths by the side of the Whitby and Pickering road between Kingthorpe and the Fox and Rabbit Inn. These specimens interested me very much indeed, for I had heard of such monstrosities, but never seen them. I have learned of other observers finding similar growths during last summer in different places in North Yorkshire.

The general character of the flowering or fruiting spikes is demonstrated by the four typical specimens in the illustration. Since I was unable to offer any explanation it seemed desirable to obtain the opinion of some authorities, and so I submitted specimens to several well-known botanists, and they very kindly gave to me the information embodied in these notes. Their remarks are more particularly interesting, because each one expresses an opinion from his own point of view. Like the phenomenon of the fall of the leaf, very little appears to be known as to the cause of these monstrosities. I visited the sites at Allerston and Kingthorpe, and failed to determine any reason regarding soil conditions why the plantains, growing here, should manifest these monstrous spikes.

Bentham and Hooker, in their *British Flora*, state in reference to the Plantaginaceae: "Herbs with radical tufted or spreading leaves, and leafless flower stalks bearing a simple spike or single terminal flower —the stem in some exotic species becoming elongated, branched and leafy." In No. 2 specimen, the second from the left, the stem has branched from the top forming an umbelliferous arrangement. This form would appear to be quite new, and the most peculiar. I have seen a plant of *P. lanceolata* with a much branched stem and a normal inflorescence at the end of each branch. This is quite a different monstrosity. Although *Plantago lanceolata* is a very variable plant I have been unable to find any references to these peculiar inflorescences except in the books mentioned.

At Allerston sand-pit I found *Reseda lutea* L. and very fine specimens of *Erodium cicutarium* L'Hér. growing in association with the *Plantago*; and in the adjoining arable field *Calamintha clinopodium* Benth., and very large growths of *Lycopsis arvensis* L., 1½ feet high at least, and still in flower on the 26th November were noted only a little distance away from the *Plantago*.

On the 5th September 1930, Miss E. M. Wakefield, of Kew, informed me that "the branched spikes of *Plantago* appear to be a known teratological phenomenon, but it is impossible to say what may be the cause.

Mr Worsdell mentions them several times in his book on *Teratology*, and suggests they may be a reversion to an earlier type, comparing them with the normal branched spikes of certain other species." Miss Wakefield refers to *The Principles of Plant Teratology*, by W. C. Worsdell, published by the Ray Society, 1915-1916. This work is now out of print and rare, and I have found it impossible to purchase a second-hand copy, but Mr T. Sheppard, M.Sc., kindly lent me a copy, and I wish to thank him.

I consulted Mr A. Matins Smith, M.A., F.L.S., and in a letter, dated 7th October 1930, mainly dealing with other matters, he incidentally makes the following reference to these monstrosities: "With regard to your *Plantago* fruits, I think their chief interest to me is the evidence they give of discontinuous variation. We are apt to think the change from a simple to a branched inflorescence must have required a long course of evolution, but here we see it at a single step. I notice in Lees' *Flora of West Yorkshire* a variation similar to the one you have found is recorded for *Plantago lanceolata*. Some botanists attach other meanings to such sports, monstrosities, mutations or what you will, but to me the above is their chief importance." The entry in Dr Arnold Lees' *Flora*, to which Mr Smith makes reference, is: "A curious monstrosity of this—a plant with many heads on a single stalk—was found by A. Carr, by a footpath from Ecclesfield to Wadsley Bridge, Sheffield."

Dr G. C. Druce, F.R.S., expressed the opinion that these growths were not the result of the activity of an insect. On the 7th November 1930, he wrote: "Thank you for the specimens of *Plantago*. These are one of the many monstrosities of that variable plant. I do not think 'a mite' has anything to do with the growth." Dr Druce refers me to his *Flora of Berkshire*, and here I find, on page 415: "*Plantago lanceolata*, a three-headed monstrosity (*triceps*) was found by Mr J. C. Melvill in moist meadows close to Sandford Mill on the Loddon in 1876." Dr Druce names these growths "var. *monstrosa*"—if three heads "*triceps*," and, if more than three, "*multiceps*."

Dr Pearsall has always been extremely kind in helping me, and in this matter I thank him for his assistance. He writes: "28th November 1930. I am returning your *Plantago* spikes. I have never seen anything like them, and certainly think they should be recorded. So far as I know there is no explanation of such freaks. It is usually said they may be induced by abnormal nutritional conditions, but I do not know of any experimental work on the subject, unless, it is included in the early part of the *Mutation Theory* by De Vries. I feel certain De Vries did not mention *Plantago*."

It would be presumption for me to express any opinion on this subject, yet I may be allowed to state that from a certain experience I have had with cultivated plants it would appear these growths may be due to some peculiar condition associated with their nutrition. As will be seen later, I did venture to suggest tentatively to Mr Worsdell that undue pressure, or unequal pressure on the root might have some influence in producing such growths. It may be unusual weather, interfering with the normal metabolism of the plant, encourages these abnormalities.

Plantago lanceolata is a perennial, so that the observation for a few consecutive seasons of the plants which have produced abnormal inflorescences this season may throw some light on the subject, and this I intend to do.

My good friend, Mr H. J. Wilkinson, of York, sent to me an old book, published in 1817 by Thomas Hopkirk, the younger, of Dalbreth, F.L.S., M.W.S., entitled *Flora Anomia—A General View of the Anomalies in the Vegetable Kingdom*, and from page 144 I take the following: "The flower-spike of the Ribwort Plantain sometimes becomes proliferous, a number of small spikes growing from the main one, and often, lesser ones again from them. Plate X., fig. 2. A plant in Dalbreth garden has retained this appearance for many years, whilst one, removed into a poor soil, returned immediately to its original form." This is an experiment I hope to repeat. The illustration is not similar to any of those I have given in the plate, but as a type resembles No. 3 from the left.

Dr Druce suggested I should consult Mr W. C. Worsdell, the author of the *Principles of Plant Teratology*. Mr Worsdell has been very gracious, and has supplied to me valuable information for which I am very grateful.

On the 2nd December 1930, Mr Worsdell wrote: "Many thanks for yours of the 29th ultimo, which interested me greatly. I am always so pleased to see specimens of abnormalities, and to hear from people who are interested in morphological questions. I have a figure of the same abnormality of *Plantago lanceolata* in my book. I state therein that this is due to proliferation of some of the flowers of the normal inflorescence giving a compound inflorescence. But what causes this condition is quite beyond me." The illustration given in Mr Worsdell's book approximates to No. 1 specimen on the left of those given in the plate.

In another letter, dated 7th December 1930, Mr Worsdell very kindly sent to me a pertinent reference from his book, and this I quote later. Mr Worsdell continues: "I am afraid I say very little in my book about this abnormality in *Plantago lanceolata*. I deal with all phenomena entirely from a morphological standpoint, and do not consider physiological causes. I do not think you will be able to discover the physiological cause of the monstrosity. It might be done after laborious experimentation year after year."

"There are cases of proliferation which we may regard with certainty as representing the exact condition of the ancestry of the plants concerned. In other cases where we cannot presume with certainty the proliferation is a reversion to a character in the immediate ancestry, yet when we find the abnormal feature occurs as a perfectly normal one in other closely allied members of the group, it no longer assumes a strange and unnatural appearance, and in such cases the reversion theory is much more applicable than any other. For example, the abnormal branching of the spike in *P. major* or *P. lanceolata* finds its counterpart in the normally branched inflorescence of such species as *P. Cynops* and *P. Psyllum*."—*Principles of Plant Teratology*, ii., 32.

The illustration given, Fig. 3, Plate XXVII., of the *Plantago lanceolata* is "the proliferation of the lower flowers of the spike into paniculate inflorescences." Mr Worsdell adds: "This is the same abnormality as yours. Though the branching of the spike in *P. lanceolata* takes its own peculiar form, it is this tendency to branch under certain stimuli—What are they?—which seems to suggest the branching may be a reversion to a former ancestral condition, especially as certain modern species branch normally. The simple spike is probably derivative." With the greatest possible respect to Mr Worsdell, I should have imagined the simple spike would be original, and the branched inflorescence derivative.

Again, on the 21st December 1930, I received another letter from Mr Worsdell, from which I take the following: "Thank you very much for the photograph of the *Plantago* abnormalities. I am very pleased to see them. They are certainly extraordinary, especially No. 2 from the left. It would be interesting to know the exact conditions required to produce them. You are quite welcome to print my remarks if you consider to do so. I am glad you are publishing an account of these things. These abnormalities may quite well be due to pressure on the roots, but one cannot tell without experimenting, and the abnormal treatment would have to be inaugurated at a very early period in the life of the plant."

I have done my best to collect data relating to these monstrosities of *P. lanceolata* from those best able to supply authoritative information. The result is to learn that the cause of these growths is unknown. If others are in a position to throw more light on this interesting subject I can only hope they will do so.

I have already referred to Mr Worsdell's statement relative to the branching of *P. lanceolata* "under certain stimuli," and to this question: "What are they?

I have suggested pressure on the root may result in some cases of abnormalities, because I have had an instance of fasciation in the growth of a Delphinium, which I feel confident followed from this cause. A true instance of *post hoc, propter hoc*. There may be, of course, other causes and, I believe, there are. But with regard to these monstrosities of *Plantago lanceolata* I have come to the conclusion—for what it may be worth—they have developed as a result of certain seasonal peculiarities, such that growth was retarded for a time, and then suddenly stimulated. That is the stimulus I suggest in answer to Mr Worsdell's enquiry, which means really the process of nutrition received a much increased impulse. In these particular instances I don't think the nature of the soil has played any unusual part in the phenomenon.

I shall keep these plants under observation, and record what happens. Such facts may prove helpful. The elucidation of this difficult subject I must leave to more capable investigators.

I thank very sincerely my good friends, Mr John Burnett and Mr A. S. Lealman, for all the care and trouble they have taken to obtain a good photograph.

ADVENTIVE FLORA OF BURTON-UPON-TRENT.

Sir Roger Curtis, Bart.

3/5. Anemone coronaria L. Eur.
4/1. Adonis annua L.
4/2. A. aestivalis L. Eur.
6/9. Ranunculus arvensis L.
13/3. Delphinium Ajacis L. Eur.
21/1. Papaver somniferum L. Orient.
21/5. P. Argemone L.
23/2. Glaucium corniculatum (L.) Curt. Eur. (phoeniceum Cr.).
24/1. Roemeria hybrida DC. Eur.
33/4. Mathiola bicornis DC. S. Eur.
35/4. Radicula islandica (Oeder) Dr. (palustris Moench).
42/1. Alyssum montanum L. Eur.
49/2. Sisymbrium Sophia L.
49/3. S. altissimum L. Eur. (pannonicum Jacq.).
49/4. S. orientale L. Eur. (Columnae Jacq.).
49/5. S. Irio L. Eur.
49/13. S. Loeselii L. Eur.
50/1. Erysimum cheiranthoides L.
51/1. Conringia orientalis (L.) Dum. Eur. (Erysimum perfoliatum Cr.).
51/2. C. austriaca Sweet. Eastern Eur.
54/4. Brassica Rapa L. Cult. Turnip.
54/16. B. juncea Coss. Asia. (lanceolata Lange).
54/22. B. incana (L.) F. Schultz. (adpressa Boiss.).
60/2. Coronopus Coronopus (L.) Karst.
61/3. Lepidium Draba L. Eur. Var. virescens Dr.
61/8. L. perfoliatum L. Eur.
61/10. L. chalepense L. Orient.
61/20. L. virginicum L. N. Am.
61/22. L. densiflorum Schrad. N. Am.
64/1. Thlaspi arvense L.
68/1. Isatis tinctoria L. Eur.
70/1. Vogelia paniculata (L.) Hornem. Eur.
74/1. Bunias Erucago L. S. Eur.
76/3. Rapistrum rugosum (L.) All. Eur.
79/1. Erucaria hispanica (L.) Dr. Greece, etc. (=Myagroides Hal.).
80/4. Raphanus sativus L. Cult.
95/2. Saponaria Vaccaria L. Eur.
96/3. Silene conica L.
96/4. S. noctiflora L.
96/5. S. anglica L.

96/15. S. conoidea L. E. Eur.
96/16. S. dichotoma Ehrh. Eur.
96/24. S. Muscipula L. Medit.
117/3. Malva rotundifolia L.
117/9. M. parviflora L. Eur.
145/2. Lupinus albus L. Eur.
152/9. Trigonella M. procumbens Reichb. E. Eur., etc. (caerulea).
153/1. Medicago Falcata L.
153/3. M. sativa L. Cult.
153/4. M. hispida, var. denticulata (Willd.). Var. apiculata (Willd.).
153/5. M. arabica Huds.
153/7. M. lupulina L.
154/1. Melilotus altissima Thuill. (officinalis).
154/2. M. alba Desr. Eur.
154/3. M. arvensis Wallr. Eur. = Petitpierreana Hayne.
154/4. M. indica (L.) All. Eur. (parviflora Desf.).
154/6. M. infesta Guss. Sicily.
155/15. Trifolium hybridum L. W. Eur.
155/37. T. resupinatum L. S. Eur.
160/2. Lotus Tetragonolobus L. S. Eur.
166/6. Astragalus odoratus Lam. Orient.
170/1. Coronilla varia L. Eur.
170/3. C. Scorpioides Koch. Eur.
173/1. Onobrychis Onobrychis (L.). (sativa Lam. = vichfolia Scop.).
176/9. Vicia lutea L.
176/24. V. Faba L. Cult.
176/25. V. narbonensis L. S. and C. Eur.
176/26. V. pannonica Crantz. Eur.
176/31. V. peregrina L. Eur.
176/38. V. pubescens (DC.). Medit.
178/3. Lathyrus tuberosus L.
178/9. L. Aphaca L.
178/22. L. Ochrus L. S. Eur.
180/1. Pisum arvense L. Cult.
189/11. Potentilla norvegica L. Eur.
219/2. Lythrum Hyssopifolia L.
245/3. Bupleurum rotundifolium L.
245/6. B. lancifolium Hornem.
249/1. Ammi majus L. S. Eur.
276/3. Peucedanum sativum (L.) B. & H.
279/1. Coriandrum sativum L. Eur.
279/2. C. Tordylioides Boiss. First time in Britain.
282/1. Daucus Carota L.
283/2. Caucalis Daucoides L. Eur.
283/5. C. nodosa Scop., var. pedunculata (R. & F.) Dr.
283/8. C. latifolia L. Eur.
296/10. Galium tricorne Stokes.
298/5. Asperula arvensis L. Eur.

300/1. Sherardia arvensis L.
339/4. Ambrosia trifida L. N. Amer.
341/3. Xanthium spinosum L. Cosmop.
356/1. Hemizonia pungens Torrey & Gray. Calif.
356/3. H. Kelloggii Greene. Calif.
364/1. Anacyclus clavatus Pers. S. Eur.
364/2. A. radiatus Lois. S. Eur.
364/3. A. valentinus L. S. Eur.
364/4. A. dissimilis Pomel. Algeria.
370/17. Chrysanthemum coronarium L. Medit. Var. bicolor.
371/3. Matricaria suaveolens (Pursh) Buch. N. Amer. (discoidea DC.).
371/5. M. decipiens C. Koch. Orient.
371/6. M. disciformis DC. As. Min.
371/7. M. suffruticosa (L.) Dr. S. Afr. (multiflora Fenzl).
383/7. Senecio squalidus L. S. Eur.
383/8. S. viscosus L.
385/1. Calendula officinalis L. Eur.
385/2. C. arvensis L. Eur.
393/2. Arctium nemorosum Lej. = Newbouldii A. Benn.
395/3. Carduus pycnocephalus L., var. tenuiflorus (Curt.).
396/8. Cirsium arvense (L.) Scop., var. mite Koch, and var. setosum C. A. Mey.
397/3. Onopordon illyricum L. Eur.
399/1. Mariana Mariana Hill. Eur. (lactea Hill).
405/12. Centaurea Cyanus L.
405/15. C. Calcitrapa L.
405/31. C. Solstitialis L. Eur.
405/32. C. melitensis L. S. Eur.
409/1. Cichorium Intybus L.
467/2. Anagallis arvensis L.
467/3. A. foemina Mill.
485/1. Gilia achilleaefolia Benth. Calif.
485/2. G. capitata Sims. N. Amer.
487/1. Nemophila insignis Benth. Calif.
488/4. Phacelia tanacetifolia Benth. Calif.
493/2. Lappula Lappula (L.). Eur. (echinata Gilib.).
494/1. Asperugo procumbens L. Eur.
496/5. Amsinckia Menziesii Lehm. Calif.
504/1. Alkanna lutea A. DC. Eur.
507/2. Lithospermum purpureo-caeruleum L.
509/5. Echium italicum L. Eur.
510/2. Cerinthe minor L. Eur.
513/3. Convolvulus tricolor L. S. Eur.
516/1. Lycopersicon Lycopersicon (L.). S. Amer. (esculentum
522/1. Datura Stramonium L.
Hill).
532/7. Linaria minor (L.) Desf. (viscida Moench).

534/1. Antirrhinum majus L. Eur.
534/2. A. Orontium L.
566/7. Salvia Aethiopis L. Medit.
566/17. S. verticillata L. Eur., etc.
571/2. Lallemantia iberica F. & M. Asia Minor.
576/1. Marrubium vulgare L.
580/1. Wiedemannia orientalis Fisch. & Mey. Orient.
588/16. Plantago Lagopus L. S. Eur.
593/3. Herniaria hirsuta L. Eur.
600/6. Chenopodium murale L.
600/7. C. opulifolium Schrad. Eur.
600/8. C. album L. (candicans).
600/8. C. album L. (candicans). Vars. subficifolium (Murr) Dr. lanceolatiforme (Murr) and × viride. glomerulosum (Reichb.). paucidens (Murr) Dr. viridescens St Amans. pseudo-Borbasii (Murr) Dr. bernburgense (Zschacke) Dr. vivax × opulifolium = Preismanni Murr = Wheldoni Murr.
600/11. C. leptophyllum (Nutt.) Brit. & Br. N. Amer.
600/12. C. ficifolium Sm.
600/13. C. glaucum L.
600/14. C. Vulvaria L. (olidum Curt.).
600/20. C. striatum (Krasan) Murr. India.
604/2. Beta vulgaris L. Cult.
606/3. Atriplex patula L., var. bracteata Westerlund.
606/11. A. tatarica L. Eur.
613/1. Salsola Kali L.
615/15. Polygonum equale Lindm.
615/19. P. patulum M. Bieb. E. Eur. (Bellardi auct.).
618/20. Rumex Patientia L. Eur., in some quantity.
618/29. R. obovatus Danser. S. Amer. (paraguayensis).
632/2. Mercurialis annua L.
637/2. Urtica urens L.
698/1. Asphodelus fistulosus L. Eur.
698/2. A. tenuifolius. Orient.
754/1. Panicum miliaceum L. Tropical.
756/2. Setaria viridis (L.) Beauv.
756/3. S. glauca Beauv. Eur.
765/1. Phalaris minor Retz.
765/2. P. bulbosa L. Eur. (tuberosa L.).
765/5. P. canariensis L. Cult.
765/7. P. paradoxa L. Eur.
766/2. Anthoxanthum aristatum Boiss. Eur. (Puelii Lec. & Lam.).
780/1. Agrostis verticillata Vill. Guernsey, etc.
782/1. Polypogon monspeliensis (L.) Desf.
785/1. Apera Spica-venti (L.) Beauv.
794/1. Avena fatua L., var. glabrata (Peterm.).
794/7. A. sativa L. Cult.

826/16. FESTUCA DANTHONII A. & G. Eur. (CILIATA Danth.). Abundant in its second British locality.
826/18. F. MYURUS L.
826/19. F. LIGUSTICA (All.) Bert. Eur.
827/1. BROMUS RIGENS L. (MAXIMUS Desf. = VILLOSUS Forsk.).
827/4. B. TECTORUM L. Eur.
827/8. B. RUBENS L. S. Eur.
827/16. B. SECALINUS L.
827/22. B. ARVENSIS L. Eur.
827/27. B. SQUARROSUS L. Eur., etc.
831/1. SECALE CEREALE L. Oat. Cult.
835/3. HORDEUM MARINUM L. Guernesy. (MARITIMUM With.).
835/12. H. DISTICHON L. Cult.

Almost all the above were seen by me in company with Sir R. Curtis. It seems desirable to bring all these Staffordshire adventives together. Most of them have already appeared in the List.—G. C. D.

PLANTS NEW TO THE CYPRUS FLORA, 1928 AND 1930.

G. CLARIDGE DRUCE.

RANUNCULUS BRACHYCARPUS Fisch. & Mey. Kyrenia.
PAPAVER RHOEAS L., var. PRYORII Druce. Platres.
FUMARIA BRACTEOSA Pomel. Paphos.
RESEDA ALBA L., forma PARVULA. Stavrovuini.
ALYSSUM MARITIMUM Lam. Bellapaise (probably introduced).
EROPHILA PRAECOX Stev., var. VIRESCENS (Jord.). Troodos, 6000 ft.; Limassol, sea-level.
LEPIDIUM DRABA L. Nicosia, etc. The common plant is *L. chalepense* L.
CAMELINA SATIVA Cr.
BURSA CONCAVA (E. At.). Larnaca; Paphos.
B. PATAGONICA (E. At.). Gambo. Ag Neophilus.
B. BATAVORUM (E. At.). Nicosia.
B. MEDITERRANEA (E. At.). Pedaila; Kythraea.
B. RUBELLA (E. At.). Paphos; Limassol; Lapithos, etc.
B. TREVIORUM (E. At.). Gambo Valley.
B. TURONIENSIS (E. At.). Makhaeras.
CALEPINA CORVINI Desv. Myrtou.
CERASTIUM VULGATUM L. Kuklia.
GYPSOPHILA PORRIGENS Boiss. ? Alien. Larnaca.
SILENE GALLICA L. (Unlocalised previously.) Paralimni.
RAPHANUS SATIVUS L. Limassol; Stavrovuini, etc.

Viola Riviniana Reichb. Stavros; Kikko.
V. mirabilis L. Prodromos; Saita.
Eudranthe coelirosa L. Alien. Saita.
Dianthus sp. Paralimni.
Sagina procumbens L. Ktima.
Hypericum perforatum L., var. angustifolium Gaud. Troodos.
Althaea rosea L. Makhaeras.
Malva Alcea L. Platres.
Erodium moschatum L'Hérit. Famagusta.
Acacia syanophylla. Planted. Limassol.
Medicago arabica Huds. Myrtou.
Vicia bithynica L. Larnaca; Paphos; Stavrovuini.
V. hirsuta L. Stavros.
Dodonaea viscosa. Morphode, planted.
Rosa gallica L. Ornodos; Vasa; probably introduced.
Caucalis nodosa Scop. Rather common—Lapithos; Paphos; Nicosia. Previously only recorded by Sibthorp.
C. leptophylla L., var. erythrotrica Post. Stavrovuini.
Sambucus Ebulus L. Kythraea.
Diotis maritima Cass. Between Famagusta and Salamis. Once previously found at Limassol by Michoelides.
Crepis fallax Boiss. Gambo Valley.
Xanthium Strumarium L. Prodromos.
Centaurea Reuteriana Boiss. & Held. Pentadactylos; Makhaeras.
Taraxacum hellenicum D. Platres; Nicosia; Hilarion.
Sonchus oleraceus L., var. triangularis Wallr. Larnaca; Famagusta.
  Var. ciliatus (Lam.) Dr. Nicosia.
  Var. albescens Neum. Myrtou.
S. asper Hill. Nicosia.
Solanum rubrum Mill. Kikko.
S. miniatum Bernh. S. Andrea; Alefka.
S. glaucum. Naturalised. Famagusta.
Linaria. This was doubtless Sibthorp's *Cymbalaria* which has not been verified.
Anagallis arvensis L., var. albiflora. Deonos Forest.
Veronica didyma Ten. Troodos; Paphos; Bellapaise.
  Var. Thellungiana (Lehm.). Paphos; Gambo; Myrtou.
Orobanche ramosa L. Akanthou.
Scrophularia peregrina L. Lapithos.
Mentha cypria H. Br. Troodos; Stavros.
Salvia hierosolymitanus Boiss. Yialousa.
S. verbenaca, var. vernalis. Kikko; Lania, 1000 ft.
Chenopodium murale L. Common, Limassol, etc. (This is doubtless the *C. rubrum* of Holmboe.)
C. opulifolium Schrad. Salamis.
C. album L. Salamis; Famagusta.
Atriplex hastata L. Paphos; Kuklia; Larnaca.
A. tatarica L. Larnaca.

EUPHORBIA CASUA Boiss. Salamis.
POLYGONUM AVICULARE L., var. HETEROPHYLLA (Lindm.). Nicosia.
FICUS SYCAMORUS L. Doubtless planted, Famagusta.
URTICA URENS L. Tsuda; Limassol; Famagusta; Ay Napa; Nicosia.
CASTANEA CASTANEA (L.) Karst. Platres.
SALIX FRAGILIS L. Near Gambo.
RUSCUS ACULEATUS L., var. vel forma PUMILUS Druce. Lapithos.
TULIPA sp. Near Myrtou. A very dark blackish crimson in several fields.
ZANNICHELLIA REPENS Boenn. Larnaca.
CAREX PENDULA Huds. Stavros.
C. TROODII Turrill. Troodos, 6300 ft.
C. EXTENSA Huds. Larnaca.
SPOROLOBUS PUNGENS Kunth. Salamis.
POLYPOGON MONSPELIENSIS Desf., var. PURPURASCENS. Limassol.
SCHISMUS ARABICUS Nees. Only recorded by Sintenis. Still at Lefkonica.
TRISETUM PANICEUM Pers. Nicosia.
AVENA CLAUDA Dur. Gambo.
A. WEISTII Steud. Nicosia; Pentadactylos.
KOELERIA BERTHEA Boiss. & Blanch. Paphos; Kyrenia; Salamis; Larnaca.
K. PUBESCENS Beauv. Larnaca.
FESTUCA BREVIS (Boiss. & Kotsch.). Myrtou.
BROMUS RIGIDUS Roth. Larnaca.
B. STERILIS L. Limassol.
B. SCOPARIUS L., var. STENANTHA Stapf. Limassol.
LOLIUM RIGIDUM Nym. Limassol; Kyrenia.
TRITICUM BICORNE Forsk., var. NANA. Salamis.
HORDEUM MARINUM L., var. Larnaca.
DRYOPTERIS FILIX-MAS, nov. var. Stavros.
POLYPODIUM VULGARE L., var. BREVIPES Milde. Pentadactylos.
CHEILANTHUS FRAGRANS W. & B. Only noted by Sibthorp. Lania; Pentadactylos.
TOLYPELLA GLOMERATA Leonh. Paralimni.
CHARA CANESCENS Loisel. Limni; near Famagusta; Larnaca.
C. GYMNOPHYLLA Beauv. Famagusta.
C. GALIOIDES DC. Famagusta; Limni; Salamis.
LAMPROTHAMNOS ALOPECUROIDES Braun. Larnaca; Rizokarpazo; Paphos; Kyperomda; Platres.

I have to most warmly thank Dr Unwin for his extreme kindness and valuable assistance in planning my itinerary and in allowing me the guidance of his forest officer and the company of his assistant, Mr Qongier, who accompanied me through the island. He was a real help. My Secretary, Mr J. Chapple, was of great assistance on this most enjoyable botanical expedition. I have covered over 3000 miles of that lovely island.

THE BRITISH FORMS OF *RANUNCULUS ACER* L.

E. Drabble, D.Sc., F.L.S.

The forms of *Ranunculus acer* L. occurring in this country have presented difficulties to many collectors, and it cannot be said that attempts to refer our plants to named Continental varieties or species have been altogether successful. That there are several distinct plants included under the name *R. acer* must be apparent to everyone who has made a careful examination of them. For the last six years the writer has given much attention to these plants both in the field and in cultivation.

In the forefront of most attempts to elucidate the varieties has figured the character of the rhizome, and this very largely has been the cause of the difficulty. It had generally been stated that *multifidus* (*Boraeanus*), *tomophyllus* and *erectus* have little or no rhizome; *Steveni*, *vulgatus* and *Friesianus* a more or less well developed one.

Before the rhizome as a diagnostic feature can be evaluated, it is necessary to have a clear conception of the mode of growth of the subterranean parts of *R. acer*. The plant is perennial and forms new branches on the underground stem, and these branches develop eventually into the next season's flowering stems, *i.e.*, the buttercup-plant as generally gathered. One of these branches arises at the base of the current year's aerial stem, in the axil of one of the so-called " radical " leaves, and carries on the growth sympodially below the surface of the ground. This may be accompanied by other lateral branches behind the main one, and all of them may grow upwards to form the next year's flowering shoots.

After the flowering and fruiting stages are over the subterranean stem of the current year disappears, usually entirely, and the lateral branches alone are left. These lateral branches may remain very short or may lengthen considerably, in the latter case forming rhizomes. In both cases adventitious roots are formed freely. The actual length of rhizome present in any specimen at any particular time depends on (i) the amount of actual lengthening of the subterranean branch before it turns upwards as the flowering stem, and (ii) the degree to which decay of the proximal part (*i.e.*, the originally attached end) of this branch has proceeded. With little actual lengthening *or* with rapid disappearance of the rhizome from behind, we have the condition described in French works as " souche à rhizome court ou nul." On the other hand, if the underground branch lengthens and does not die away rapidly from behind we have the " souche à rhizome allongé, oblique ou horizontal."

R. multifidus DC. (*Boraeanus* Jord.), in the Isle of Wight at any rate, is a spring or early summer plant. After flowering and fruiting the aerial parts die away more or less completely, together with the current year's subterranean stem, leaving the lateral branches as short, stout knobs which form adventitious roots, but do not lengthen. These in the following year grow upwards in the air directly to form the flowering stems with their basal leaves. Thus *multifidus* is usually without a rhizome at any stage. Yet even in *multifidus* lengthening may rarely and very exceptionally take place. I have seen in Mr J. E. Little's herbarium a beautiful example of this. In the old schemes, with their insistence on rhizome characters, such a plant finds no place.

In *tomophyllus,* which generally resembles *multifidus* in behaviour, we often find slight lengthening of the subterranean stem, and thus we have the "souche à rhizome moins court" (Rouy and Foucaud).

Steveni and *Friesianus* in the Isle of Wight for the most part flower in late summer and autumn, and when the fruits have been shed—often quite late in October—the basal leaves are retained and growth of the subterranean lateral branch proceeds during the winter. Early in the following year, about February, this branch forms from its terminal bud a tuft of leaves and the rhizome continues to grow. In the summer—before, during, or after flowering—the rhizome dies away from behind and so the flowering stage may retain little or no rhizome.

The case of *R. rectus* is of particular interest. This name was given to plants with a short oblique rhizome, but differing in no significant characters from *Steveni*, and there can be no doubt that the curtailed rhizome led Rouy and Foucaud (*Fl. Fr.* i.) to place *rectus* as a "forme" under *Boraeanus* (*multifidus*) instead of under *Steveni* with which it should be united and not maintained even as a form, the other alleged points of distinction, even those of the fruit, being quite inconstant.

It thus becomes evident that the presence or absence of a rhizome cannot be regarded as of primary diagnostic value. When considered for the variety as a whole it may be significant, but it is of little or no value in the determination of individual specimens. *Multifidus* very rarely develops one, but quite exceptionally it may do so; *Steveni* and *Friesianus* usually form one, but it may decay and disappear early. How far its development and persistence are dependent on soil-conditions it is not yet possible to say. The *formation* of a rhizome is probably more or less independent of the kind of soil, its *persistence* largely conditioned by the soil.

When the real significance of rhizomal characters has been grasped the problem is much simplified. The fruit-characters generally mentioned have been examined in a very long series of British and Continental specimens, with the following results:—(i) The described differences are partly due to the comparison of fruits in different stages of maturity; (ii) even where differences do occur in the fully mature achenes, they are not correlated with the other characters.

In form the petal and the scale over the nectary do not appear to offer constant and reliable characters in individuals. In *multifidus* the petal is often cuneate-based and the scale longer than broad, while in *Steveni* and *Friesianus* the petal is generally ovate and the scale broader in proportion to its length, but taken alone these differences do not seem to have much diagnostic value. With regard to the scale, Moss also (*Camb. Brit. Fl.*) was evidently of the same opinion, as he states that the scale " is said " to be longer than broad in *multifidus*, about as broad as long in *Steveni*.

We are left then with leaf-form and general habit of growth on which chiefly to fix our attention.

Cultivation of our main lowland types has led me to the belief that there are three genetically distinct plants to which the names *multifidus* (*Boraeanus*), *Steveni* and *Friesianus* are applicable, and that these were definitely recognised by Jordan, though, unfortunately, his (and also Boreau's) lengthy descriptions fail to distinguish clearly between diagnostic characters and individual variations. It is instructive to compare Jordan's brief descriptions in the *Diagnoses* (1864) with the lengthy ones in *Obs.* vi. (1847). We see how in the later work he has pruned away much redundant detail and come much nearer to clear and accurate diagnoses.

In dealing with a problem like the present one the first step must always be to determine as carefully as possible what are the genetically distinct forms and what are their constant characters. It is then necessary to find out how far these forms have been recognised and named by earlier workers. If they have previously been named and described, one must then examine the descriptions and, if necessary, amend them, usually by way of disencumbering them of details of non-essential fluctuating characters, and in this last proceeding great care and judgment are necessary. It is absurd to name plants afresh because they do not conform exactly to the original descriptions in their fluctuating characters, while possessing those constant characters which really constitute the essential features of the taxonomic unit. And yet this has been done all too frequently. As an example may be cited Wallroth's work on the Scandinavian pansies, in which he names afresh many of the plants recognised by Jordan and others because he could not make them square in some non-essential features with the original descriptions. The writer may here mention that, though he is a whole-hearted supporter of the " type-system," he realises that it is just as necessary to distinguish between essential and non-essential features in the type-specimen as in the description.

Ranunculus acer L. (*sensu lato*).

(1) Var. MULTIFIDUS DC. Prodr. i., 36 (1824); *R. Boraeanus* Jordan, Obs. vi. (1847). Aerial stems up to 18 inches to two feet or more in height, glabrous or slightly hairy below, branches forming very acute angles with one another; rhizome generally undeveloped, though very exceptionally this may be present. Leaves very deeply divided palmately into long and narrow acute segments; petioles long, those of the basal leaves densely hairy.

Exsicc.—*R. Boraeanus* Jord., Billot Fl. Gall. et Germ., 1105, in Herb. Mus. Brit. and Herb. Drabble. *R. Boraeanus* Jord., Schultz Herb. Norm. nov. ser. cent. 22, 2102, in Herb. Mus. Brit.

Forma *stipatus* Jordan (pro sp.), Diagn., p. 72, is a well-marked form of lower growth, with fewer divisions of the leaves and the primary segments of the cauline leaves with long stalks.

Exsicc.—Glen Avon, Banff, August 1889—G. C. Druce. Kilgwrrwg Bottom, Monmouthshire, 19th May 1908—W. A. Shoolbred. (Both in Herb. Druce.)

Forma *tomophyllus* (Jord.); *R. tomophyllus* Jord. Diagn., p. 72 (1864). Habit generally similar to *Boraeanus* Jord., but plant usually of less stature and with smaller and less finely divided leaves. Petiole and lower part of aerial stem densely hairy. Some of these characters may be static—my cultures seem to indicate that they are—but *tomophyllus* is so closely similar to *multifidus* that it is best treated as a form of that variety. The application of the name in herbaria shows that collectors have taken widely different views of the quantitative development of the characters just mentioned necessary to qualify a plant for this name. Those with densely hairy lower part of the stem may securely be called *tomophyllus*.

Exsicc.—*R. Boraeanus* Jord. *R. tomophyllus* Jord., Port du Dro, Belleîle, Morbihan, 13 Juin 1894, in Herb. Mus. Brit. *R. tomophyllus* Jord., Kérnel, Belleîle, Morbihan, Juin 1901, Herb. Gadeceau, in Herb. Mus. Brit. *R. acris* L., c. *Boraeanus* Jord., f. *tomophyllus* Jord. Weston-super-Mare, July 12, 1909, Watson Ex. Club, in Herb. Drabble.

(2) Var. R. Steveni (Andrz.) ap. Besser. Suppl. iii. ad Cat. Pl. Hort. Bot. Gymnas. Volhyn. (1814); *R. acris* L., Jord. Obs. vi., p. 15 (1847); *R. Steveni* Jord. Diagn., p. 73 (1864). Habit similar to that of *multifidus*, but usually not so tall and with the branches more widely spreading. Aerial stem—at least below,—petioles and leaves hairy, often densely so; rhizome generally formed and more or less persistent, but often completely absent by decay in flowering specimens. Leaves much less deeply lobed than in *multifidus* into 3-5 cuneiform segments which overlap little or not at all and are undivided in their basal half or two-thirds, but divided above into short broadly-based triangular acute lateral lobes.

Plate.—Reichb. Icon f. 4605, where, however, the central lobe is broader and less cuneiform than usual. The leaf of his fig. 4606, labelled *rectus* (see below), is more typical of *Steveni*.

Exsicc.—*R. Steveni* Andrz. Finchley, Middlesex, 1913; and Moons Hill, Freshwater, I.W., October 1930, in Herb. Drabble.

R. rectus Boreau Fl. Cent., ed. 3, p. 15 (1857); Jordan Diagn., p. 74 (1864). The plants thus named both from this country and from the Continent which can be regarded as in any way authentic are merely *Steveni* with little or no rhizome. The immature carpels may have a long narrow form much as in those figured in Reichb. Icon. f. 4606, but this form is not maintained by the mature achenes, and *rectus* should be entirely merged in *Steveni*.

In the north of Scotland dwarf, few-flowered and unusually hairy plants of *Steveni* occur, but it does not seem desirable to distinguish these by name until they have been tested in cultivation.

(3) Var. FRIESIANUS Jord. Obs. vi., p. 17 (1847); Boreau Fl. Cent., ed. iii. (1857) (including *R. vulgatus* Jord. ap. Boreau Fl. Cent., ed. iii.; Jordan Diagn., p. 74 (1864). I cannot distinguish in any way between *Friesianus* and *vulgatus* in characters of rhizome, leaf or fruit. Plant (in this country) generally flowering in late summer and autumn. Rhizome usually well developed and often persisting during the flowering period; flowering branches more slender and divaricate than in *multifidus* and *Steveni* and not so tall. Basal and lower cauline leaves divided to about two-thirds into very broad contiguous or overlapping segments, which are again divided only into short ovate-triangular lobes. Beak of fruit generally rather longer than in *multifidus* and *Steveni*, but this is not a reliable character.

Exsicc.—*R. vulgatus* Jord., de Coulanges (Yonne), cult., 1859, ex herb. A. Jordan, 1864, in Herb. Mus. Brit. *R. vulgatus* Jord., Vichy Allier, 14 Juin 1867, Herb. Gaston Genevier in Herb. Mus. Brit. *R. Friesianus* Jord., Moons Hill, Freshwater, November 1929, in Herb. Drabble.

In the extreme north of Scotland and on high mountains *Friesianus* is often dwarf and more hairy than in lowland districts—though it is usually a very hairy plant. Generally these are merely states of ordinary *Friesianus*, but in Dr Druce's herbarium are plants from Shetland and Sutherland which are clearly different and should be distinguished as a form. Some of these specimens have been incorrectly named *tomophyllus* by Marshall and others, but they are quite different from that plant.

Forma *villosus* mihi; plant small (c. 4-10 in.) with few medium or large flowers; stems, petioles and laminae densely clothed with yellowish or fawn-coloured hairs, teeth of the leaves usually shorter and more obtuse than in typical *Friesianus*.

Exsicc.—*R. acer* L., var. Betty Hill, Sutherland, July 1907, G. C. Druce. *R. acris* L. Loch Spiggie sands, Shetland, July 1921, G. C. Druce. *Ran.* [ ]. Sea coast, Melvich, W. Sutherland, 15th September 1897, W. A. Shoolbred (as *Steveni*). (All in Herb. Druce.)

Of the names in the British lists there remain for consideration *pumilus*, *Nathorstii* and *minutiflorus*.

(4) Var. PUMILUS Wahlenberg, Fl. Lapp., 1812.—This plant was found by Dr Druce on Corrie Sneachda, Cairngorms, Easterness, in July 1888 (see *Journ. Bot.*, 1889, p. 204). It ranges in height from under six inches to thirteen inches or more. It has an erect aerial stem with few rather large flowers and with the peduncles often arching. The radical leaves are tripartite with divisions of the *Steveni* type, but with very obtuse teeth, the terminal tooth being short and rounded. Both radical

and cauline leaves are rather glossy and almost glabrous; the petals are marked with brownish veins. In general appearance the plant greatly resembles *R. bulbosus*.

Exsicc.—*R. acris* L., var. *pumilus* Wahl., Corrie Sneachda, Easterness, July 1888, G. C. Druce. *R. acris* L., *sens. lat.*, Lochnagar, S. Aberdeen, G. C. Druce (both in Herb. Druce). *R. acris* L., var. *pumilus* Wg., in Monte Knudsho, alpium Dovrensium, August 1864. F. Ahlberg, in Herb. Mus. Brit.

Townsend (*Journ. Bot.*, 1900, p. 381), following Rouy and Foucaud, wrongly gives *R. parvulus* Clairv. as a synonym. Clairville (Man. d'Herborisation en Suisse et en Valais) places *parvulus* in his group with "fruits tuberculés."

R. Nathorstii A. Beurlin (pro sp.) in Act. Holm., 1889.—I am very grateful to Dr Druce for allowing me to examine a specimen in his herbarium from Ben Lawers thus named by Freyn. It is an upright plant, 7 inches in height with almost glabrous stem, leaves of the *multifidus* type and a single large flower 1 inch in diameter even in the cup-form (*i.e.*, without spreading the petals) and with long oblong sepals. This specimen looks distinct enough, but other plants that have been named *Nathorstii* by Bucknall and others from Scotland are merely upland states of *Steveni*. Until I have seen much more material and have had the opportunity of cultivating this plant I am reluctant to express an opinion as to its status.

R. acer, f. *minutiflorus* Druce, *Rep. B.E.C.*, 1916, p. 469. This name is applied to plants with very small, but perfect, flowers. I have seen these small flowers in *multifidus* and *Steveni*. Carpels are fully formed and are apparently fertile, as they swell and ripen in the usual way. Such plants do not seem to be leading to the diclinous condition which is of common occurrence in *R. acer* and is well described by Marsden-Jones and Turrill in *Journ. Genetics*, vol. xxi., No. 2. The lemon yellow flowers to which they refer in their interesting paper have been seen by me only in *tomophyllus* (Finchley, 1913) associated with deeply emarginate petals.

The British segregates of *R. acer* then appear to be these:—

R. acer L.
  (a) Var. *multifidus* DC.
      f. *stipatus* (Jord.).
      f. *tomophyllus* (Jord.).
      f. *minutiflorus* Druce.
  (b) Var. *Steveni* (Andrz.).
      f. *minutiflorus* Druce.
  (c) Var. *Friesianus* (Jord.).
      f. *villosus* mihi.
  (d) Var. *pumilus* Wahl.
  [(e) Var. *Narthorstii* (A. Beurl.).]

It would be unwise at present to make any detailed statement about the distribution of the different varieties of *R. acer*, but it appears that var. *multifidus* and its forma *tomophyllus*, and also var. *Steveni*, are common throughout Great Britain, and that var. *Friesianus* is much less common, though widely distributed; var. *Friesianus*, f. *villosus* has been seen from N. Scotland only; var. *pumilus* from N. Scotland and possibly from Monmouthshire.

The records given below are drawn chiefly from specimens in Dr Druce's herbarium and in my own; for the naming I am responsible.

R. acer L.

Var. *multifidus* DC.—V.-c.s 10, 12, 17, 18, 19, 20, 21, 22, 23, 24, 27, 28, 34, 35, 37, 38, 49, 55, 57, 58, 59, 62, 70, 87, 88; Sarnia.

Forma *tomophyllus* (Jord.).—V.-c.s 6, 17, 21, 23, 24, 25, 32, 35, 38, 39, 49, 57, 74, 92, 97, 105, 107, 108; Sarnia. Ireland—Kerry; Killarney (G. C. Druce).

Forma *stipatus* (Jord.).—V.-c. 94, Glen Avon, Banff (G. C. Druce).

Var. *Steveni* (Andrz.).—6, 7, 10, 12, 13, 14, 15, 17, 19, 21, 22, 24, 34, 35, 49, 53, 54, 57, 58, 59, 65, 66, 88, 96, 97, 98, 104, 105, 106, 107, 108, 110; Sarnia. Ireland:—Kerry, Killarney (G. C. Druce); Galway, Roundstone (G. C. Druce); Cork, Glengariff (G. C. Druce).

Var. *Friesianus* (Jord.).—(10) I. of Wight—Freshwater (E. and H. Drabble). (12) N. Hants—Odiham (C. E. Palmer). (17) Surrey—Limpsfield (H. E. Fox). (21) Middlesex—Acton (no collector's name). (44) Carmarthenshire—Pembery (G. C. Druce). (49) Carnarvonshire—Snowdon (G. C. Druce). (57) Derbyshire—Castleton (E. and H. Drabble). (83) Midlothian—Morningside (H. C. Bell). (106) E. Ross—Ault Guish (G. C. Druce). (112) Shetland—Balta Sound, Unst (G. C. Druce).

Var. *Friesianus*, f. *villosus* Drabble.— 88) Mid Perth—Ben Lawers (G. C. Druce). (108) E. Sutherland—Betty Hill (G. C. Druce); Melvich (W. A. Shoolbred). (112) Shetland—Loch Spiggie Sands (G. C. Druce).

Var. *pumilus* Wahl.—(92) S. Aberdeen—Lochnagar (G. C. Druce); Cairntoul (H. E. Fox). (96) Easterness—Corrie Sneachda, Cairngorms (G. C. Druce).

I am very grateful to Dr Druce for the loan of all the sheets of *R. acer* in his herbarium, which carry more than two hundred specimens.

DR DRUCE'S EIGHTIETH BIRTHDAY.

It is reported that extra staff was needed at Oxford Post Office on May 23, 1930, to deal with the correspondence for Yardley Lodge, Crick Road. And this may well have been the case since over 800 telegrams. letters, cards, photographs and addresses arrived that day, bringing their hearty messages of congratulation and regard to Dr Druce on the attainment of his four-score years. Some took the form of "Round Robins" signed by the staff of Institutions. In others the Head acted as spokesman for his Members and Fellows. Eminent botanists, not only of the United Kingdom but throughout the world, sent their greetings, and, in many cases, what was yet more appreciated, their personal photographs also; so that a collection has been made that is unique and invaluable of the present day likenesses of some of the most important botanists of the world.

The mere opening of the envelopes could not be completed before it was time for their recipient to take train to London for the lunch arranged in his honour by the Earl and Countess Buxton, where among the guests were the Marchioness of Lansdowne, the Countess of Mexborough, Lady Loch, Lady Rayleigh, the Ladies Alethea Buxton, Delia Peel, Phyllis Ponsonby, Victoria Russell, The Honourable Mrs H. Adeane, Hon. Mrs G. Baring, Hon. Mrs C. N. Rothschild, Viscount Gray of Fallodon, Viscount Henley, Hon. Mr Justice Talbot.

After this came his "birthday party" proper. This took the form of a Conversazione in which the Wild Flower Society, to which he has always acted as guide, philosopher and friend, combined with the Botanical Society of the British Isles to fill with their joint members the spacious Marylebone Room of the Great Central Hotel, the arrangements being shared between the Hon. Mrs Baring and Mrs T. J. Foggitt. Dr Druce himself stood at the door to receive the 150 guests who crowded to congratulate him on the 80 years he seemed to bear so lightly. Among so many whose names are well known in the world of botany and other old friends it would be invidious to make a selection.

At four o'clock came the little ceremony of the occasion. Sir Maurice Abbot-Anderson took the chair on the platform, on which, beside Dr Druce, were gathered Viscount Gray of Fallodon, Chancellor of the University of Oxford; Lord Henley, the Hon. Mrs Baring, Lady Davy, and Mrs R. W. Dent, President of the Wild Flower Society. In the charming and graceful fashion for which he is so famed, Lord Grey then spoke of his old friend and of his world-wide renown, quoting him as a splendid example of the inexhaustible satisfaction and pleasure which are earned by those gifted with the power to take their joy and interest in outdoor natural history. This was a pleasure that he himself understood from his own personal studies in bird life. It would be a mistake to suppose that Dr Druce's special knowledge was limited to botany, for the speaker had yet to find a subject on which the Doctor did not seem well informed; but in botany he had vast information to give, he delighted to give it, and he gave it unsparingly and in the most delightful fashion. All the world made use of him, and he was willing to help all alike. In the words of the poet (name not disclosed but known to many present),

If the plant is too abstruse
Pack it off to Doctor Druce.

In a touching allusion to his own blindness, Lord Grey told how his old friend, with his medical knowledge, had been able to help him, and though, fortunately, with no need to know anything about it, even in Braille he proved his match. He concluded by saying that, though the progress of science was great, it yet gave no indication of bringing us to the end of knowledge; rather, it but made the world of the unknown ever larger and vaster, so that for patient endeavour and research there was no limit.

Lord Henley in a witty speech picked up a few points that Lord Grey had left unsaid, and Mrs Dent, on behalf of the Wild Flower Society, added hearty congratulations and wishes and gratitude for ever-ready help.

Lord Grey then handed to Dr Druce a cheque as a birthday offering from his many friends and admirers of the Botanical Society and the Wild Flower Society, and the big room echoed with applause when the Doctor rose to return his thanks. He spoke in his usual happy fashion, and if his voice showed evidence of emotion this was but natural in a moment when such overwhelming proof of affection and esteem were offered. In truth, he would have been less than human if such tribute as the day had brought had left him unmoved.

With a few words of thanks to the organisers, Sir Maurice Abbot-Anderson closed the formal proceedings, and then came tea and the opportunity for many friends to meet and exchange greetings and the newest gossip of the botanical world. The whole afternoon was voted a most delightful and successful occasion, and when the hero of it all—tired probably, but happy certainly—motored home to Oxford in the twilight of that memorable day of May, he heard the bells of his own city, which he has served so long and truly, ringing their peals of acclamation for his eightieth birthday.

Gertrude Foggitt.

The first circular sent out by the organising committee was as follows:

Stoneybrough, Thirsk, Yorks,
February 15th, 1930.

Dear Sir/Madam,—It has been suggested that, as the 80th birthday of Dr George Claridge Druce is on May 23rd next, it would be a pleasing recognition of his labours if his fellow-workers would send to him on that date, to Yardley Lodge, Oxford, a postcard of congratulation, with, if possible, a signed photograph. We venture to ask you to give it your support, and allow your name to be appended to this appeal.—We are, yours sincerely,

V. Adeane (The Hon. Mrs H. Adeane).
H. T. Baker (The Rt. Hon. H. Trevor Baker).
O. Baring (The Hon. Mrs Guy Baring).
R. Curtis (Sir Roger Curtis, Bt.).
R. H. Corstorphine (R. H. Corstorphine, Esq.).
J. Davy (Lady Davy).
T. J. Foggitt (T. J. Foggitt, Esq., J.P.).
E. Vachell (Miss E. Vachell).
M. L. Wedgwood (Mrs Wedgwood).

GERTRUDE FOGGITT, *Sec., pro tem.*

This was followed by a second circular, as under:—

Stoneybrough, Thirsk, Yorks,
May 7th, 1930.

Dear Sir/Madam,—It has been suggested that, as the 80th birthday of Dr George Claridge Druce is on May 23rd next, it would be a pleasing recognition of his great labours for Botany if his fellow-workers would send to him on that date, to Yardley Lodge, Oxford, a postcard of congratulation, with, if convenient, a signed photograph. We venture to ask you to give it your valued support.—We are, yours sincerely,

Abbot-Anderson, Sir Maurice, C.V.O., M.V.O., President of Flora's League.
Boulenger, G. A., D.Sc., LL.D., F.R.S., Professor of Botany, L'Université, Brussels.
Britton, Dr N. Lord, Keeper of Botanic Gardens, New York, U.S.A.
Chodat, Prof. Dr. R., Institut Botanique, L'Université, Geneva.
Cotton, A. D., Keeper of the Herbarium and Library, Royal Botanic Gardens, Kew.
D'Arcy Thompson, Prof., F.R.S., St Andrews University.
Domin, Karl, Professor of Botany, Prague.
Fernald, Prof. M. L., Gray Herbarium, Harvard University, U.S.A.
Gordon, G. S., Professor of English Literature, President of Magdalen College.
Gregory, Sir R., D.Sc., LL.D., Editor of *Nature*, President of Gilbert White Fellowship.
Harmer, Sir Sidney F., F.R.S., President of the Linnean Society.
Hill, Capt. A. W., C.M.G., F.R.S., Director of the Royal Botanic Gardens, Kew.
Loder, Gerald W. E., F.S.A., etc., President of the Royal Horticultural Society.
Parry, Lewis Morton, President of the Pharmaceutical Society.
Praeger, Dr R. Lloyd, National Library, Dublin.
Priestley, Prof. J. H., The University, Leeds.

Ramsbottom, Capt. J., O.B.E., Keeper of the Department of Botany, British Museum.

Saye and Sele, the Lord, High Steward of the City of Oxford.

Schroeter, Prof. Dr. Carl, Professor of Botany, The University, Zurich.

Smith, Prof. W. Wright, F.R.S.E., Regius Keeper of the Royal Botanic Gardens, Edinburgh; King's Botanist in Scotland.

Tansley, Prof. A. G., F.R.S., Sherardian Professor of Botany, the University of Oxford.

Trow, A. H., Principal of the University of Wales, Cardiff.

Ullswater, R. H. Viscount, G.C.B., President of the Society for the Promotion of Nature Research.

Vines, Dr S. Howard, F.R.S., Emeritus Professor of Botany, Oxford.

Watson, Prof. J. A. S., Professor of Rural Economy, Oxford; President, Ashmolean Natural History Society of Oxfordshire.

Weiss, Prof. F. E., F.R.S., Professor of Botany, Manchester University.

Acting Committee:

V. Adeane (The Hon. Mrs H. Adeane).
H. T. Baker (The Rt. Hon. H. Trevor Baker).
O. Baring (The Hon. Mrs Guy Baring).
R. Curtis (Sir Roger Curtis, Bt.).
R. H. Corstorphine (R. H. Corstorphine, Esq.).
J. Davy (Lady Davy).
T. J. Foggitt (T. J. Foggitt, Esq., J.P.).
E. Vachell (Miss E. Vachell).
M. L. Wedgwood (Mrs Wedgwood).

GERTRUDE FOGGITT, *Sec., pro tem.*

A Reception will be given to Dr Claridge Druce in the Great Central Hotel, London, at 3 p.m., May 23rd, when Viscount Grey of Fallodon, K.G., the Chancellor of the University of Oxford, will be the speaker. Tickets, including tea, 3/6 each, to be had from Mrs Foggitt, Stoneybrough, Thirsk, Yorks.

Addresses were sent by:—

The Royal Botanic Gardens, Kew.—"We feel that we cannot let the occasion of your eightieth birthday pass without conveying to you our hearty congratulations and our best wishes for your continued health and vigour. We take this opportunity also of expressing our admiration for your work on British Botany and especially for your Floras of Oxfordshire, Berkshire, and Buckinghamshire, and your very complete 'List of British Plants.' The recent honour bestowed on you of election to the Royal Society was felt by all who knew you to be a fitting recognition of the many years you have devoted to the study of the British Flora."—(Signed) A. W. Hill, T. F. Chipp, A. D. Cotton, T. A. Sprague.

The signatures following represent those of the botanical staff at Kew and of botanical visitors who have been working in the Herbarium recently:—E. M. Wakefield, E. G. Baker, N. Y. Sandwith, R. D. Williams, R. Lloyd Praeger, W. C. Wordsell, S. A. Skan, E. Nelmes, W. B. Turrill, N. E. Brown, O. Stapf, J. M. Dalziel, C. V. B. Marquand, A. W. Trethewy, H. Gilbert Carter, M. L. Green, P. W. Richards, V. S. Summerhayes, G. Kukenthal, J. Hutchinson, J. B. Gillett, T. Pierch, V. E. Tredeliuz, W. R. Price, W. B. Grave, E. Milne-Redhead, J. H. Burkill, H. K. Airy Shaw, C. W. P. Nicher, J. Secker, A. R. Horwood, A. A. Bullock, F. Ballard, C. I. Dickinson, F. N. Howes, D. E. Newton, C. H. Jones, R. Paulson, H. N. Ridley, C. Norman, C. Thuerder, W. Dallimore.

A printed address from the Department of Botany, British Museum.—"To Dr George Claridge Druce, J.P., M.A., D.Sc., LL.D., F.R.S. On the occasion of the eightieth anniversary of your birthday, the scientific staff and others studying in the Department of Botany, British Museum, send heartiest congratulations and greetings. We hope that you will long continue in good health and in the enjoyment of the botanical studies by which you have so enriched the knowledge of our native flora."—(Signed) J. Ramsbottom, A. B. Rendle, A. J. Wilmott, J. E. Dandy, C. Norman, A. Gepp, G. Tandy, A. Lorrain Smith, E. Baker, D. Hillcoat, S. Moore, G. Taylor, A. H. G. Alston, F. L. Stephens, A. W. Exell, W. R. Sherrin.

The Ashmolean Natural History Society of Oxfordshire (of which Dr Druce was a founder).—"We, the undersigned members of the A.N.H.S.O., wish to congratulate Dr Druce on his 80th birthday, and, whilst thanking him for his past services to our Society and to the botanical world in general, hope that he may enjoy such health as will enable him to continue that help for some time to come."—(Signed) J. A. S. Watson (President), E. B. Poulton, H. Balfour, J. J. Walker, W. J. Sollas, H. H. Turner, F. A. Bellamy, T. V. Barker, J. M. Donie, R. S. Troup, K. A. Stone, H. Knox Shaw, H. M. Best, C. J. Bayzand, G. D. H. Carpenter, P. H. Badcock, R. Shuffrey, E. E. Calcutt, L. D. Palmer, M. G. Hueles, J. Burtt Davy, J. Collins, A. H. Hamm, Campbell Keir, H. B. Counsell, E. B. Vincent, E. F. Pittman, J. L. Norton, H. Muir, W. Lester Smith, E. B. Taylor, H. Bancroft, E. D. Amery, J. Dolbear, H. C. Goodall, M. C. Radford, F. Naab, J. Haynes, H. B. Musgrave, A. H. Best, G. H. Rogers, K. F. M. Filsell, A. H. Flemming, T. Trollope, J. T. Filsell.

Sir Sidney F. Harmer, President of the Linnean Society.

The Royal Horticultural Society, G. W. E. Loder (President) and Council.—"The Council of the Royal Horticultural Society desire me to convey to you their hearty congratulations on the occasion of your 80th birthday, and at the same time to express their warm appreciation of your long and varied services to Horticulture and Botany, coupled with the expression of their earnest hope that you may long be spared to continue it in health and happiness."

Prof. F. O. Bower, President of the British Association (of which Dr Druce was Secretary of the Oxford Meeting of 1894, and Vice-President in 1926).

Geneva—L'Institut de Botanique Herbier Botanique.

The New York Museum.—Prof. H. Fairchild Osborn.

The University of St Andrews.—Prof. D'Arcy Thompson, Sir Robert Robertson.

The University of Bangor.—Prof. D. Thoday.

The University of Cambridge.—Prof. A. C. Seward, J. C. Willis, W. Balfour Gourlay.

The University of Cambridge, Botanic Garden.—H. Gilbert Carter.

The University of Edinburgh, Royal Botanic Gardens.—Prof. W. Wright Smith, and staff.

The University of Leeds.—Prof. J. H. Priestley, Dr W. A. Sledge.

The University of London.—Prof. R. Ruggles Gates.

The University of Manchester.—Sir H. Miers, Prof. F. E. Weiss.

The University of Newcastle-on-Tyne, Armstrong College.—Prof. J. W. Heslop Harrison, Dr K. Blackburn.

The University of Reading.—Prof. J. R. Matthews, Prof. J. Percival.

The University of Southampton.—Prof. S. Mangham.

The University of Wales, and the National Museum, Cardiff.—Principal A. H. Trow.

The University of Amsterdam.—Prof. B. H. Danser.

The University of Basle.—Dr P. Aellen.

The University of Berlin-Dahlem.—Prof. O. E. Schulz, Em. Prof. P. Graebner.

The University of Brussels and Jardin du Botanique.—Dr Willdemann, Prof. E. G. Boulenger.

The University of California.—Prof. E. D. Merrill.

The University of Charmont, France.—Patrice Riencourt de Longpré.

The University of Carlsruhe.—Dr K. H. Zahn.

The University of Coburg.—Pfarrer G. Kukenthal.

The University of Copenhagen.—Prof. C. H. Ostenfeld.

The University of Geneva and L'Herb. Boissier.—Prof. Dr. R. Chodat, G. Beauverd, V. Tackholm, A. Martin, F. Chodat.

The University of Harvard.—Prof. M. L. Fernald, Prof. R. Thaxton.

The University of New York.

The University of Oslo.—Prof. J. Holmboe.

The University of Paris, The Sorbonne.—Prof. S. A. Dangeard, Gaston Bonnier.

The University of Pragne.—Prof. Dr. K. Domin.

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The University of Stockholm.—Dr E. B. Almquist, Dr H. Dahlstedt.

The University of Vienna.—Dr R. Von Wettstein, Dr K. Ronniger.

The University of Zurich.—Dr H. Schinz, Em. Prof. C. Schroeter.

The Society for the Promotion of Natural Areas (of which Dr Druce was one of the founders).—Viscount Ullswater, Viscount Henley.

The Pharmaceutical Society of Great Britain (of which Dr Druce was an examiner for ten years).—The President, Mr H. M. Parry.

The Gilbert White Fellowship.—The President, Sir Richard Gregory, and Council: " . . . the highest appreciation of his active work and stimulating influence in connection with Botanical Science and Nature knowledge generally. The Council trusts that he may yet continue for some years to instruct and inspire students of Plant Life, not only in Great Britain but elsewhere. In common with every friend of natural knowledge throughout these islands and beyond, the Council wishes Dr Druce to realise that his personality, as well as his knowledge, have been of the highest value to the promotion of interest in Nature generally, and that they are grateful for a life of such value and achievement."

The Corporation of the City of Oxford.—The Mayor, Captain G. T. Button: " . . . I felt as Mayor of Oxford that I must send my congratulations to one who has served the City so long and faithfully as yourself."—Alderman Sir Hugh Hall, E. J. Brooks, J. H. Salter. W. H. Perkins, E. B. Lewis, etc.

The School of Forestry, Oxford.—Prof. A. H. Troup, Dr J. Burtt-Davy.

The School of Rural Economy, Oxford.—Prof. J. A. S. Watson, Dr Bancroft.

The John Innes Horticultural Institution.—The President, Sir Daniel Hall.

Flora's League.—Sir Maurice and Lady Abbot-Anderson.

The United Grand Lodge of Freemasons (of which Dr Druce is P.A.G.D.C.).—Grand Secretary, Sir P. Colville Smith.

British Section, The International Association of Journalists.—The Committee, and Clive Holland, A. S. E. Ackermann, Sir H. Brittain, Sir R. Bruce, etc.

Bergen Museum.—Olaf Hanssen, Rolf Nordhagen.

The All Saints' Feoffees, Oxford (of which Dr Druce has been Chairman for 30 years).—S. King, Vice-Chairman.

The Oxfordshire Archaeological Society (of which Dr Druce is joint Secretary and Vice-President).—Rev. C. C. Brookes, etc.

Oxford City Public Library (of which he is Chairman).—The Committee, Librarian (E. E. Skuce), and staff.

Oxford Committee of Public Health (of which Dr Druce has been Chairman since 1897).—Dr Williams, Dr Omerod, and staff.

Oxfordshire Regional Planning Committee.—Chairman, Committee and Secretary: " . . . An expression of high appreciation of the services you have rendered in so many directions to the efforts which are being made to preserve the amenities of the countryside."—Major A. J. Muirhead, M.P.

The Provincial Grand Lodge of Oxfordshire (of which he has been Charity Representative for 21 years).—J. A. Tawney, Secretary.

Oxford Income Tax Commissioners (of which Dr Druce has been a member for over 30 years).—W. H. Linnell, Secretary.

The Oxford and District Gas Company (of which Dr Druce is Vice-Chairman).—H. J. Bradley, W. H. Castle, R. Downing, W. E. Caton.

The Oxfordshire Royal Horticultural Association.—President, Mrs George Herbert Morrell: "Heartiest congratulations on your 80th birthday, and may you have many more!"

The West of Scotland Agricultural Institute.—Prof. Major K. W. Braid.

The Wild Flower Society.—Mrs Dent, Mrs Foggitt, Lady Davy, etc.

The Oxford Philatelic Society (of which Dr Druce is a past President).—F. A. Bellamy.

The Oxford South Ward Allotments Association (of which Dr Druce has been Chairman for over 20 years).—The Committee, Members, and Secretary (R. Hurst).

The (Oxford) Grandpont Horticultural Society.—The President, Mrs G. Herbert Morrell.

The Northamptonshire Natural History Society (which Dr Druce founded in 1876).—Beeby Thompson, H. N. Dixon.

Campbell College, Belfast.—Capt. C. D. Chase.

The Malvern Field Club.—President, Rev. A. Day; Vice-President, Canon J. E. H. Blake; Secretary, S. E. Warner.

Innsbruck.—Dr J. Murr.

Langendorf.—Dr R. Probst.

Velp.—Dr J. P. Lotsy.

Magdalen College (to which Dr Druce belongs).—"Warmest congratulations from Magdalen and myself."—President, Prof. G. Gordon, and Members; ex-President Sir T. Herbert Warren, K.C.V.O.; Prof. C. J. Webb, Prof. C. H. Turner, Prof. A. Tansley, etc.

Abell, Miss L.
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Adamson, Prof. R. S. (Capetown).
Adeane, The Hon. Mrs H.
Airy-Shaw, H. K.
Almquist, Dr E. B. (Stockholm): "My best congratulations, and thanks for all your kindness to me."
Allchin, Mr and Mrs F.
Allen, Miss Barbara.
Allen, Miss Olga.
Alston, A. H. G.
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Boucher, W. W.
Boulenger, Prof. Dr. A. G. (Brussels).
Bourne, Dr G. C., F.R.S.
Bower, Prof. F. O., F.R.S., President of British Association. —". . . of your own contributions to exact recording I need not speak; they are common property . . ."
Bogle, Mrs.
Bradley, H. J., J.P., and Mrs.
Braid, Prof. Major K. W.
Brady, Lady and Miss E.
Branson, F. W.
Bray, Miss K.
Bretch, Mr.
Brice, Miss N.
Bright, Miss Ruth.
Briquet, Prof. J. (Rector, L'Université du Genève).
Brittain, Sir Harry.
Britton, C. E.—" May you long continue to be the guide and inspirer of all interested in Field Botany."
Britton, N. Lord and Mrs (Bronx Park, New York).
Broadwood, Miss Bertha.
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Cator, Miss Diana.
Chamberlain, Miss Hilda.
Champneys, Mrs Basil.
Chase, Capt. C. D.
Chipp, Major T. F.
Chodat, Prof. Dr. R., Geneva.—" Avec toutes nos felicitations et bons voeux."
Chodat, F., D.Sc.
Churchill, Lady Gwendoline.

Churchill, Mr and Mrs, T. H. B., and Jack.
Claridge, Miss M.
Clark, W. Feaver.
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Cove, Mrs Miriam and Captain.
Corstorphine, R. H., B.Sc., and Mrs.
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Cruft, G.
Cruttwell, Rev. E. C.
Cunninghame Grahame, R. B.
Curtis, Sir Roger, Bart.
Dahlstedt, Dr H. (Stockholm).
Dallimore, W.
Dalziel, J. M.
Dandy, J. E.
Danzeard, Prof. S. A., Sc.D.—"Très honoré collègue. Permittez-moi de me joindre à tous les admirateurs de votre belle et longue carrière scientifique pour vous addresser à l'occasion . . . mes compliments personnels et mes voeux. Le Professor Gaston Bonnier qui s'etait tant occupé de systematique aurait eu une autorité plus grande que la mienne pour vous dire ses confraternelles félicitations. Vous voudrez bien trouver dans celles que je vous prie d'agréer l'écho de la voix de mon éminent prédecesseur dans le Chaire de Botanique de la Sorbonne."
Dartmouth, Earl of.
David, Miss Aileen.
Davies, Mrs.
Davy, Lady.
Davidson, W.
Debenham, Mrs.
Dent, Mrs and the Misses Edith and Hilda.
Dickinson, C.
Dixon, Lt.-Col.
Dixon, H. N.
Dodd, Theodore, M.A., J.P.
Dolbear, J., J.P.
Domin, Prof. Dr. K. and Mrs (Prague).—"Very best wishes in the new decade of your rich life. Mrs Domin joins with me in the congratulations and our boy also sends his best wishes to "Uncle" Druce.
Douie, Sir James and Lady.
Douie Urquhart, Mrs.
Downing, R.
Drabble, Dr Eric.
Druce, Francis.
Drummond, Mrs Lawrence.
Drummond, Miss May.
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Farrer, Mrs B. A.
Fernald, Prof. M. L. (Harvard).
Fiennes, Hon. Mrs.

Farrer, Mrs.—"Reginald Farrer's mother sends you her warmest congratulations on the attainment of your 80th birthday. Your talents, your life, and your achievements have blessed the world, and I thank you for your help to my son, and send you a photograph of his Garden of Memory."
Filsell, J. T. and Mrs.
Fisher, Rev. Canon R.
Fleming, Dr and Mrs.
Fleming, A. H.
Flintoff, R. J.
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Gibson, Dr A. G.
Gillett, A. B. and Mrs.
Gillett, Jan B.
Gilmour, J. P.
Gilson, A. G.
Gleichen, Lord and Lady Edward. —" Warmest good wishes and congratulations. We think with great pleasure of our flower hunt together outside Damascus."
Godden, Mrs A. J.
Goodall, H. C.
Gordon, Prof. G. S.
Gourlay, W. Balfour, M.A.
Graebner, Em. Prof. Dr. P. (Berlin).—Telegram : " Affectionate congratulations."—Graebner.
Graham, Mrs Dorothy.
Gray, Frank and Mrs.
Green, H. L.
Gregory, Mrs E.
Gregory, Sir Richard.
Grenfell, Miss Maud.
Grey of Fallodon, Viscount, K.G.
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Hirst, H.
Hodgkin, C. E.

Holden, Prof. H. S.
Holder, F. W.
Holland, Jim and Guy.
Holmboe, Prof. J.
Horner, Lady.—"Very many congratulations and all best wishes from all at Mells."
Horner, Rev. G.
Horner, Maurice.
Horwood, A. R.
Houstoun, Mr and Mrs C.
Howes, F. N.
Hughes, Mrs M. G.
Hurst, C. P.
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Johnston, Col. H. H.
Jones, Prof. Neilson.
Jones, Clarence C.
Jones, E. Marsden.
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Keir, Campbell.
Kennett-Hayes, Miss.
King, Bolton, M.A.
Kingsdon, C.
Kirby, Mr and Mrs F.
Knight, S.
Knowling, Mrs.
Knox-Shaw, Dr.
Kukenthal, The Pfarrer (Coburg).
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Lamb, Joshua.
Landon, Miss Jennie.
Lansdowne, The Marchioness of.
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Leach, C.
Leach, E.
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Lee, Mrs.
Legge, Lady Joan.
Lester, Smith.
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Lhuerdon, Camillo.
Little, J. E., M.A.
Loch, The Lady.
Loder, Gerald.
Lofthouse, T. A.
Long, J. W.
Lotsy, Prof. J. P., D.Sc.
Lowe, Marshall A. F. (New York).—"I know that Dr Britton holds Dr Druce in high esteem."
Lousley, J. E.
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Lumb, D.
McGill, J. F.
McLachlan, Dr J.
Madan, F. (ex-Bodley Librarian).
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Mangham, Prof. S.
Manners, A. P.
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Marshall, Rev. T. W.
Mason, Rev. W. Wright.
Martin, A.
Matthews, Prof. J. A.
Melville, R.
Mercer, S.
Merrill, Prof. E. D. (New York and California).—". . . I still remember with pleasure our botanical conversation on board the Princess Alice in 1908 to the Orient."

Merry, Rev. Mansell.
Mexborough, The Countess of.
Meyer, Miss.
Miers, Sir H.
Miller, Brig.-Gen. A. B.
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O'Kelly, P. B.
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Osborne, Prof. Fairfield.
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Overy, Miss H. L.
Owen, Miss O'B.
Palmer, Miss Lucy D.
Parry, L. M.
Parkin, Dr J.
Patey, W. J.
Paulson, Robert.
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Pearsall, W. H.
Peck, Major Saville.
Peel, Col. the Hon. Sidney, Lady, and Miss.
Perrycoste, Mrs.
Pickard, J. W.
Pittman, E. F.
Ponsonby, The Lady Phyllis.
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Powell, Miss Doris.
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Rendle, Dr A. B., F.R.S.
Reynolds, Rev. E.
Reynolds, Bernard.
Richards, Paul.
Richmond, Mrs.
Riddelsdell, Rev. H. J., M.A.
Ridge, W. T. Boydon.—" I should like to pay my tribute to the wonderful work you have done for floristic botany and also in having achieved the distinction of being the greatest authority on the British flora."
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Ridley, Rev. S. O.
Ridley, H. N., F.R.S.
Ridley, Miss Florence.
Rilstone, F.
Robertson, The Rt. Rev. Bishop.
Robertson, Sir Robert, F.R.S.
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Russell, Lady Victoria.
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Sadler, Sir Michael.
Salter, Ald. J. H. and Mrs.
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Sandwith, C. I.
Sandwith, Noel, M.A., and Mrs.
Sargeant, R. H.
Satge, Mlle. de.
Saye and Sele, The Lord and Lady.
St Quentin, W. H.
Scherwerdt, Mrs C. M. R.
Schinz, Dr Hans (Zurich).—"In sincere recognition of your great and valuable labours for Botany."
Schulz, Prof. O. E., D.Sc. (Berlin).—"Zum 80 Geburtstage sende ich ihnen meine herzlichste Glückwünshe. Mögen Sie noch recht lange in Gesundheit und Geister frische der scientia amabilis erhalten bleiben."
Schroeter, Prof. C., D.Sc. (Zurich).
Scott, Sir Samuel, Bart.
Scott, Dr Dukinfield H., F.R.S.
Seekler, J.
Severn, Lady.
Seward, Prof. A. C., F.R.S.
Shaw, H. K. Airy.
Shaw, The Rt. Rev. Bishop.
Sherrin, W. R.
Shuffrey, Mrs.
Skain, S. A.
Skuce, E. E.
Slessor, Lady Cynthia.
Smith, Prof. W. Wright.
Smith, A. Lorrain.
Smith, Sir P. Colville.
Smith, R. L.
Smith, Miss Clarence.
Smith, Arthur.
Smith, Dr Willoughby.
Sollas, Prof. J. W., F.R.S.
Souter, Miss.
Sowter, F. A.
Sprague, T. A.
Stapf, Dr Otto.
Stanley, Brooks.
Stanley, H. D.
Stair, The Countess.
Stanley, Colonel and Lady Kathleen.
Stansfield, Dr F. W.
Stebbing, Mr and Mrs J., Norman, and Miss Violet.
Stebbing, The Misses.
Stephenson, P.
Stephenson, Francis L.
Stephenson, Miss E. H.
Stevens, Miss Catherine.
Stobie, Dr W.
Stone, Miss.
Stone, S. J. Warry.
Storrs, Mrs Francis.
Stuart, Mrs.
Stubbs, Miss.
Summerhayes, V. S.
Sutherland, James.
Svedeling, Vils E. (Upsala).
Swanton, E. W., A.L.S.
Swordler, Mrs.
Tackholm, V.
Tahourdin, C. B.
Tandy, Geoffrey.
Tansley, Prof. A. G., F.R.S.
Tawney, J. A., M.A.
Tawney, Miss Lily.

Talbot, The Hon. Mr Justice.—"May I wish you all joy of your birthday. I think it can be given to few to look back on a fuller or more useful life. . ."

Talbot, Miss.

Taylor, E. B.

Taylor, G.

Taylor, Miss.

Tennant, the Hon. Stephen.

Thackeray, Miss.

Thaxter, Prof. R. (New York).—"With felicitations and best wishes and pleasant recollections of Port of Spain."

Thoday, Prof. D.

Thomas, Dr Archibald and Miss.

Thompson, Miss Agnes.

Thompson, Prof. D'Arcy, F.R.S.

Todd, Miss.

Todd, M. R.

Todd, Mrs.

Towndrow, Mr, A.L.S., and Mrs R. F.

Townsend, Mrs.

Trapnell, Colin G.

Travis, W. B.

Trethewy, A. W.

Trollope, Thos.

Troup, Prof. R. S., F.R.S.

Trower, W. G.

Turner, Prof. C. H.

Turner, Prof. H. H., F.R.S.

Turner, Dr Cresswell.

Turner, A.

Turrill, Dr W. B.—"With all its happy memories of all your acts of kindness in the past."

Turrill, F. E.

Tulk, Miss A. A.

Ullswater, The Viscount.

Underhill, Mrs.

Unwin, Dr A. H. (Cyprus).

Vachell, Miss.

Vaughan, Dame Helen Gwynne.

Veley, Dr V. H., F.R.S.

Veley, Mrs, D.Sc.

Venables, Miss Edith and Mary.

Vincent, Rev. E. B.

Vines, Dr S. H., F.R.S.

Vivian, Miss Clarice.

Wakefield, Miss E.

Walker, Sir Emery.

Walker, Commander J. J.

Walker, H.

Walsh, Andrew.

Warren, Sir Herbert and Lady.—"If I am right, you reach today your eightieth birthday, though to look at you and your energies it is difficult to believe this, even for your oldest friends, who have watched with constant admiration and regard very many of your well-filled years. May I say that I am proud to have some claim to be reckoned among the oldest and most admiring? May I offer you my most warm congratulations and best wishes, in both of which Lady Warren joins. You wear many honours and distinctions. They are all well deserved. Indeed, I think this measure might still be added to and yet not be unduly filled. If there were a Laureateship of Botany, which would be a very charming and fitting post, no one would be so well suited to fill it as yourself. For while, so to speak, many wreaths—Civic, Scientific and Academic—are yours, no one has deserved better of the beautiful Goddess Flora, and the Chaplets which you have woven for her, and which she bids you wear herself, will, indeed, be amaranthine."

Waterfall, C.

Waterhouse, Dr A. T.

Watt, Hugh Boyd.

Watt, Winifred.
Watson, Major and Mrs Guthrie.
Watson, Prof. J. A. S.
Watson, Wm.
Warner, Spencer.
Webb, Prof. C. C. J.
Wedgwood, Mrs.
Webb, Mr and Mrs F.
Webb, J. A.
Weiss, Prof. F. E., F.R.S.
Weyer, William Van de.
White, Dr H. J., Dean of Christ Church.
White, J. Walter, F.L.S.
White, Winifred.
Wild, Mrs C. L.
Wilder, Rev. H.
Willdemann, Prof. E. (Brussels).
Willan, Mrs.
Wilkinson, E. B.
Wilkinson, Miss Maud.
Wilmott, A. J., M.A.
Willmott, Miss, F.L.S.
Williams, Rev. C.
Williams, Dr G. C.
Williams, Ethel.
Williams, Maud.
Williams, R.
Williams, I. A.
Williamson, Mr and Mrs R. H.
Wilson, A.
Winter, R. P.
Woleot, Mr and Mrs H.
Wolley-Dod, Lt.-Col. A. H. and Mrs.
Worsdell, W. C., A.L.S.
Wotherspoon, Miss.
Wright, Miss.
Young, Dr J. Stirling.
Young, Miss Gertrude.
Zahn, Dr Hermann (Carlsruhe).

The very generous sum collected by the Hon. Mrs Guy Baring it was at first thought well to use in order to purchase a portion of land on which a rare plant grows, but its owner would not dispose of it. He realises its importance and is doing his best to see that it shall be preserved. The great artist, Mr P. de Laszlo, has kindly offered to paint the portrait of Dr Druce, and the sum will be used towards defraying the cost. Sittings were actually arranged when the very serious illness of Dr Druce led to its postponement.

"O Thou whose days are yet (immortal) Spring,"
Long years ago! a tiny babe was thou,
And Mother Nature smiling from above
Bent down, and with her blessings kissed thy brow.

Like Royal King of old in wisdom grown
Thou hast the eye to see Beauty in everything,
The lofty tree waving its arms on high,
The humblest weeds by thee are named and known.

But, greatest gift of all, that kindly heart
That gathers in thy friends to share these joys,
The ever ready hand outstretched to help
The weaker brothers who would do their part.

All Hail! O chosen one! on this thy day
May countless blessings on thee through life flow
And autumn when it comes—Beloved of all!
Can only wrap Thee in its golden glow!

C. I. SANDWITH.

The extraordinarily kind appreciation shown by our members and friends entirely overwhelms me and renders it impossible for me to give adequate thanks to those who have so generously supported the idea of offering such welcome salutations.

It is true that for thirty years I have worked with my whole heart for our Society, and have striven hard to make it successful and of real service to my fellow-workers, but the labour brought its own reward. Besides, it gave me opportunities of making friends with a very large circle of nature lovers throughout the world, many, alas, who are no longer with us, but whose letters and specimens are still carefully preserved by me, while those who still remain to carry on the torch are additionally dear to me for this very delightful recognition of my eightieth birthday. We are told that the years of our life are three score years and ten, and if by reason of strength they become four score years, yet is their strength labour and sorrow. Labour, it is true, has been my lot, but that is an unmitigated joy, while sorrow, certainly, has not been my portion during the last decade, since, thanks to the forbearance and assistance given to me, it has been the happiest and perhaps the busiest ten years of a busy life. Has it not witnessed the publication of the Floras of West Ross, of the Shetlands, of Oxfordshire, Buckinghamshire and Northamptonshire, the British Plant List, the Botany of the Oxford District for the British Association Meeting, the Botany of Huntingdonshire for the Victoria County History, three Editions of Hayward's Botanist's Pocket Book, and ten annual Reports of our Society, the 3228 pages of which bear witness to the industry of our members.

During this decade it has been my great privilege to visit and botanise in Skye, the Shetlands (twice), Orkneys, the Isles of Harris, Ireland (four times), Channel Islands (three times), the Dauphiny, Switzerland, Italy (three times), Brittany, Greece (twice), Palestine, Egypt (twice), Cyprus (twice), Canaries and Teneriffe (twice), Denmark, Holland, Spain, Majorca and Dalmatia.

Thanks to the two Committees, and especially to the Hon. Mrs Guy Baring and Mrs Foggitt, the meeting in London on May 23rd was a great success, and to crown their generous efforts, a cheque was given to me in the name of our members by the Viscount Grey of Fallodon. This one could not think of taking for one's own use, but it was hoped that a piece of ground, on which a specially rare plant grew in Oxfordshire, might be purchased, in order to secure the plant's continuance. The owner proved obdurate—there were cogent reasons for his refusal—but our object was secured when his interest in the matter was sufficiently aroused to lead him to undertake its protection from marauders. The Committee then decided to ask the eminent artist, Mr P. A. de Laszlo, to undertake a portrait of me which should eventually be given to some public institution, probably the Bodleian Library, at Oxford, where his picture of the Pope now hangs. This he most kindly undertook to do, and last November I went to see him in order to arrange for sittings at Hampstead. As the fates would have it, in coming back to Oxford in a dense cold fog, a severe chill was contracted which brought on a very dangerous illness, which it seemed might prove fatal. However, one was spared, although from that date till now (May 20) I have been confined to my room. Therefore the sittings had to be abandoned. With a great generosity, which one can never repay, Mr de Laszlo broke his rule and in the third week in May he came to Oxford, gave me the sittings in my own house, and completed a real work of art, which has greatly pleased those who have seen it. The picture has been sent by Mr de Laszlo for exhibition in Paris with a selection of his other works. To put a coping stone on his goodwill he has offered to entertain the members and friends at his house in Fitzjohn's Avenue, Hampstead, in July, when it is hoped a formal presentation of the picture will be made.

Where so many have shown so gracious and kindly a disposition towards me it would be invidious to signal out any for special notice. It would, however, be sadly lacking if I omitted to offer the sincerest thanks to the Earl and Countess Buxton for giving a luncheon party on that day, and to those who initiated and served on the first Committee, or in other ways gave special help, namely:—The Hon. Mrs H. Adeane, the Hon. Mrs Guy Baring, Lady Davy, Mrs Foggitt (née Gertrude Bacon), Sir Maurice Abbot-Anderson and the Viscount Grey of Fallodon, to which for a special reason the name of Mr P. A. de Laszlo must also be added.

It may be stated that all the addresses, letters, postcards, telegrams and photographs, numbering well on to a thousand, have been finely bound in a portly volume, of which the sight will always warm my heart and bring fragrant memories to my mind in the days—they cannot be many—which are yet to come.

PERSONALIA AND VARIOUS NOTES.

Sir Joseph Cahn has presented Newstead Abbey, the Lake, and gardens to the City of Nottingham.

We are glad to see an appreciation and photograph of Dr F. W. Stansfield in the *Gardeners' Chronicle* of April 12, 1930.

Mrs O'Callaghan is to be warmly congratulated upon her winning the two medals of the Royal Horticultural Society for paintings of Fungi.

Our congratulations are offered to Mr R. E. Cory on his marriage to Miss Rosa Kester, formerly connected with the Cambridge Botanical Gardens.

On June 14 Earl Buxton was awarded the African Society's Gold Medal. This is bestowed from time to time on those who have done eminent work for South Africa.

A memorial to Lord Lambourn was unveiled by Mr G. W. E. Loder, the President, in the Royal Horticultural Society's Hall, on November 4, of a Bronze Portrait Medallion on a Marble Panel.

The twenty-third Annual Report of the National Museum of Wales, 1929-30. This energetically managed Museum, under the care of Dr Cyril Fox, was visited by 247,534 people in the year. Our members, Mr Hyde and Mr Wade, are keepers of its excellent Herbarium.

Age of Oaks.—Of indigenous trees in these islands, those which live the longest are yews and oaks, and in both cases the length of life is commonly grossly exaggerated. As to oaks, I have been familiar all my life with the country saying that they are 300 years growing, 300 years standing still, and 300 years dying. This is about 50 per cent. of the Gaelic estimate quoted by Lord Dartmouth, and is, in my judgment, much nearer the truth.—The Hon. Vicary Gibbs, Aldenham House, Elstree.

Early Stages of Plant Succession Following Forest Fires.—Observations made on two burnt areas on Mount Desert Island, Maine—one on the summit of Blue Mountain Peak at an elevation of 7000 ft., and one in the interior of Maine—show a remarkable similarity in the earlier stages of plant growth after the conflagration. *Marchantia polymorpha*, an important pioneer in burnt areas in the northern temperate zone, appeared also on Blue Mountain. It was succeeded by *Polytrichum commune* and *P. juniperinum* in Maine, and by the latter only in Jamaica. The lichen *Peltigeria polydactyla* was regularly associated with these mosses both in Maine and in Jamaica. *Pteridium aquilinum*, common on burnt areas throughout the northern temperate zone, was replaced by the closely related *P. arachnoideum* on Blue Mountain. A very similar succession has been recorded in the British Isles. The swollen bud-covered base of the trunk of birches enables them to produce new shoots after a fire more quickly than any other species with which they are associated.—A. F. Skutch (*Ecology*, 10, 177, through *Biolog. Abstr.*, 1930, 4, 1020).

In Praise of Ash.—Mr Lionel James's delightful lines in *The Times* to-day about the different sorts of wood for wood-fires have inspired the following, which I venture to send to you.

Candes, *fage*, foco si te servamus in annum:
    Sit seposta diu fax tua, *castanea*.
Ferales *ebuli* flammae: sed *fraxinus* auro
    Reginam decorat seu nova sive vetus.
Et *piceae* et *larices* cito consumuntur: *acanthus*
    Testibus Hibernis optima farra coquit.
Friges, *ulme*, rogo funus ceu putre: sed aurum,
    Fraxine, reginae fusca virensve paras.
Populus ora hominum fumo torquebit amaro:
    Panchaeo complet *malus* odore lares.
Quercus sicca vetusque gelu domat: arida regis
    Udave tu soleas, *fraxine*, calfacies.

—B., March 1. From *The Times*.

Famous Botanists.—A collection of some two dozen portraits of famous botanists, with specimens of living plants that have been named after them, has been arranged in Museum No. III., near the Main Gate, at the Royal Botanic Gardens, Kew. Among the plants, which include rock-garden plants and trees, are *Linnaea*, *Lobelia*, *Dahlias*, and *Fuchsias*. The *Dahlia* received its name in honour of the Swedish professor, Andreas Dahl, a pupil of Linnæus, and the *Fuchsia* after Leonard Fuchs, a well-known physician and botanist of the 16th century and author of the famous Herbal. *Lobelia* commemorates the name of Matthias de l'Obel, botanist to James I., and physician to William Prince of Orange. *Heuchera* (Alum root) takes its name from Johan von Heucher, a German botanist, and the tropical *Bougainvillaea* from Louis de Bougainville, a French military commander who served under Montcalm in the American War. Among famous British botanists after whom plants have been given their generic names portraits are exhibited of Charles Darwin, Sir Joseph Banks, the Rev. Stephen Hales, Archibald Menzies, and Alan Cunningham, Kew collectors, and others.

British Association for the Advancement of Science—Centenary Fund.—The Centenary will be celebrated in London, on September 23-30, under the Presidency of General Smuts. The Council is desirous that on that occasion a sum of £40,000 shall be raised, in order to put the financial side of the Society in a satisfactory condition. In summary, the Association is seeking the proposed substantial addition to its endowment in order that it may meet the expenditure appropriate to the fitting celebration of its Centenary; maintain and extend its activities for the advancement of science, and especially maintain and extend its support of research; properly discharge its national trusteeship of Down House; make itself a more effective agent of publication; prove a less exacting guest in the localities of its meetings; assure the means of carrying out its Imperial responsibilities, and extend its facilities for junior students of science. It has been stated that " to voluntary service in the interests of science the whole record of the British Association stands as one great memorial." The object of the present appeal is to strengthen the organisation which makes use of that service. Contributions may be addressed to, and will be gratefully acknowledged by, the General Treasurer, British Association, Burlington House, London, W.1.

Lucky Days.—Here is another version of the old rhyme, quoted in *The Times* of August 27, which I learned when a boy:—

Monday for health,
Tuesday for wealth,
Wednesday the best day of all,
Thursday for losses,
Friday for crosses,
Saturday no day at all.

But a far more interesting rhyme is one which was told me by a Cheshire woman:—

Monday's child is fair of face,
Tuesday's child is full of grace,
Wednesday's child is full of woe,
Thursday's child has far to go,
Friday's child is loving and giving,
Saturday's child works hard for its living,
But the child that is born on the Sabbath day
Is happy and blithe and good and gay.

—The Rev. G. S. Tudor-Evans, Audlem Vicarage, Cheshire.

Weiss, Prof. F. E., F.R.S.—The resignation of Prof. Weiss from the Harrison Chair of Botany in the Victoria University of Manchester breaks a chain of a great and uninterrupted progress from 1892 to 1930. He has taken the opportunity of writing for the Discussions Journal, " Fifty years of the Botanical Department of Owen's College and the University." Founded in 1851, it had in the person of Dr Williamson, a medical practitioner, a first-rate naturalist even in 1872. He had only one room for storing the specimens with which to illustrate his lectures. Then he appointed Prof. Boyd Dawkins, to whom the task of teaching was entrusted, and in 1880 Prof. Milnes Marshall was entrusted with Zoology. When the University Charter was obtained in 1880 a separate Chair in Botany was established. Among the pupils were Marshall Ward, who, after a distinguished career at Cambridge, came back in 1882 to be Williamson's assistant. When he left in 1888 he was succeeded by Thomas Hick, a keen Yorkshire naturalist. In 1891 Williamson, after 41 years' service, resigned the Chair, devoting himself as he had done to the investigations into the coal-measure plants till he died in 1896, when the present Sir Frederick Keeble succeeded him. In 1898 Prof. O. V. Darbishire, now at Bristol, held the Lectureship in Botany for 11 years. Manchester had the advantage, among others, as Lecturers of Mr A. D. Cotton, Dr Marie Stopes, and others. At present the University has 250 students of Pharmacy. As will be remembered the University was fortunate enough to become the possessor of the huge Herbarium of Dr J. Cosmo Melvill and that of our old Secretary, Mr C. Bailey, each consisting of about a quarter of a million sheets.

Britton, Dr N. Lord.—On May 25, 1929, Dr Britton resigned his position as Director of the New York Botanical Garden, which he had held since July 1, 1896. The Scientific Directors, in accepting his resignation, which dated from August 1, expressed their deep appreciation of his distinguished public service in planning and developing the garden throughout its 33 years of uninterrupted growth and leadership among the Botanical Institutions of the country. It was further resolved to appoint him Emeritus-Professor. They also recommended the assignment of Associate Curator Percy Wilson to be Dr Britton's research assistant. A most pleasing record of his great services is given. Dr Elmer Drew Merril, who has done such excellent work in the Philippines, was appointed the new Director, and he took on his duties on January 1, 1930. He was born at East Auburn, Maine, on October 15, 1876, and graduated at the University there in 1898. In 1904 his Alma Mater conferred on him the degree of M.A., and in 1926 the Hon. Degree of D.Sc. For three years he was assistant Agrostologist to the U.S.A. Department of Agriculture in Washington. In 1902 he was botanist in Manila, where he became the head of the Department of Botany of the Philippines. On one occasion I had the pleasure of being a fellow traveller with him to the East. In 1924 he became Dean of the College and Director of the Agricultural Experiment Station of the University of California; there he took a leading part in the organisation of the new Californian Botanical Garden at Los Angeles. He is the author of more than 200 papers dealing with the Flora of North America and the East, and has described 3000 new species and several genera. We wish him all success in his new appointment, for which his energy and ability are so well fitted.

Nature, May 17, 1930, p.752.—Congratulations and good wishes are offered to Dr George Claridge Druce, who will be eighty years of age on May 23. The story of his earlier years has been told by Dr Druce himself in the introduction to the "Flora of Buckinghamshire" (1926), the third of his series of floras descriptive of the Thames valley counties. The autobiography tells of difficulties successfully overcome by hard work and perseverance, and is an interesting record of the zeal and industry with which, from early boyhood, Dr Druce has, almost literally, pursued the study of our British flora, and has gained a knowledge of the rarer plants in their native habitats which is unique. This has been achieved in the intervals of an exacting business life—that of a pharmaceutical chemist. For many years Dr Druce has been honorary curator of the Fielding Herbarium at Oxford, and, in association with a former Professor, Dr S. H. Vines, has published accounts of the historic collections at the University, notably the Dillenian and Morisonian herbaria. The field botanist is indebted to him for a modern edition of the best used handbook of British plants—Hayward's "Botanist's Pocket-Book"—and Dr Druce has also himself compiled a "List of British Plants." Since 1904 Dr Druce has been the moving spirit of the Botanical Exchange Club, the annual report of which supplies records and critical notes on members of the British flora. In 1908 its circle of interest was extended by the formation of a society which should include well-wishers in addition to active workers. Dr Druce's botanical interests are not limited to the British flora. He has travelled widely, his visits extending so far as Australia and South America. Our latest news of him was that he was botanising in Cyprus, an account of a former visit to which he recently described at a meeting of the Linnean Society. That Dr Druce should have received an honorary M.A. degree and later the Sc.D. of Oxford* is evidence of the esteem in which his work is held and the position he has won in the University town in which he has for many years lived and worked. A further recognition was the fellowship of the Royal Society, to which he was elected in 1927.

Ancient Medicine and Surgery.—A lecture on "Ancient Medicine and Surgery" was given by Lord Moynihan under the auspices of the London Society in the hall of the Royal Society of Arts. Sir John Rose Bradford presided. Lord Moynihan said that the sources from which they derived their knowledge of ancient medicine and surgery were the bones of individuals who had died as long ago as 500,000 years, the mummies from ancient Egypt, the drawings of prehistoric and early historic times in caves and tombs, and the writings of poets, playwrights, and physicians, some of them of the highest value. The study of material from all these sources showed that disorders very similar to those now attacking mankind were very ancient enemies, and that until comparatively modern times almost identical views as to their nature, origin, and method of control were held in countries far apart. He showed how Pithecanthropus was already the victim of a certain muscular disorder; how the Heidelberg man revealed a condition of surgical tuberculosis (Neanderthal man, he suggested, like so many people to-day, was compelled to drink milk infected with tuberculosis); how chronic osteo-arthritis occurred in the Nile valley thousands of years ago, and was so characteristic that the determinant of old age was the figure of a bent, crippled old man. The hand of the aunt of Tutankhamen showed signs of a healed fracture. It was a big, strong muscular hand for a woman, commented Lord Moynihan, and this particular bone was very rarely fractured unless the hand was conveying a blow with a good deal of force. These facts gave rise to interesting conjectures as to the domestic life led by the lady! No orthopaedic surgeon in the world to-day could get a better result from a fractured forearm than was achieved 3000 years ago in the case of a young girl who had broken both forearms and had presumably died of other injuries, for the bones were only just uniting and the splints and bandages were still in position. As the bandages were unwrapped, they showed the exact methods by which splints made from Nile reeds were applied and the accuracy of the resulting alignment. The Pharaoh of the Oppression suffered and probably died from acute appendicitis. Examination of his heart gave an ocular demonstration of the Old Testament statement:—" And the Lord hardened the heart of Pharaoh." The aorta was found in such a well-preserved state that Mr S. G. Shattalk, of the Royal College of Surgeons, was able to make sections of it and compare them with those made from a man recently dead. No pathologist could tell which was the ancient and which was the modern vessel. Both were attacked by the disease atheroma, a condition in which calcium salts were deposited in the cells of the vessel, making it rigid and inelastic. It did not expand adequately to the stream of blood coming from the heart. Mental changes went with this rigid arterial system. There was a narrowness and rigidity of outlook, a lack of enterprise and initiative.

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*This degree was taken, not given.

The Age of Trees.—As some of the letters which you have recently published on the subject of the age of trees seem to be based on misconception, it may be useful to those who are interested in the question to know where such evidence may be found, and the value which may be attached to it. Domesday Book may be ruled out. It does not cite those boundary surveys of lands in which mentions of individual trees are frequent, partly, in all probability, because those boundaries were already centuries old at the time when Domesday was compiled, and were therefore well known, partly because the citation of the bounds of all the lands included in the work would have entailed the compilation of a record of gigantic size, the cost of which could hardly have been faced by a Government of that age. Furthermore, the object of the survey was to record the rights of the Crown, and, incidentally, of the feudal tenants under the Crown, rather than to protect the rights of the tillers of the soil to the lands they tilled. I have not made use of the whole of the Domesday record; but I have had to examine large parts of it, and I do not remember any instance of the mention of an individual tree. Woodland is frequently mentioned in reference especially to rights of swine pasture, the felling of timber, and the supply of firewood. The rights cited are those which the village communities had held before the Conquest; and, though a rough estimate of the area of the woodland is usually given, there is nothing of the nature of a detailed account of its bounds. The pre-Conquest charters of the Saxon age, on the other hand, cite some thousands of individual trees as boundary marks. It is noticeable that the trees usually chosen are those which are most durable, the oak, the ash, and the thorn, though in wet lands the willow is often taken as a boundary mark. It is also the case that even at the present day a tree of the species cited in the old survey may be found on the spot indicated. But it cannot be assumed that that tree is the actual tree mentioned in the charter, because landholders were naturally careful to replace trees which formed boundary marks when they decayed or were destroyed. Lord Leigh in his letter of this morning mentions a Gospel oak at Stoneleigh. The term is not uncommon in mediæval land surveys. But it had nothing to do with the " preaching " of the Gospel. As many will know, it was customary throughout mediæval England to make perambulations of parish boundaries, usually on Rogation Days, which, for this reason, were popularly termed Gang Days. In the course of the perambulation the Epistle and the Gospel for the day were read at certain customary points in the boundary, usually, as it would appear, at an oak tree. The name " Gospel oak " has survived in numerous instances on the present map. A few examples of " Epistle oak " survive in Saxon and later documents; but they are far more rare.—G. B. GRUNDY, Beam Hall, Oxford, July 3. From *The Times*.

VITAMINS.

If you want a vitamin,
With the alphabet begin.
First, there's A—dissolved in fat—
Cures, they say, the rickets that
Might, perhaps, sometimes attack
Children good or bad or slack,
Cures neuritis—poly-kind—
In your body or your mind.
Butter, lettuce, eggs, and milk
All will make you feel like silk.
Eat 'em, drink 'em, bite 'em in,
If you want A-vitamin.

Next comes B—in water found—
So you see it's all around.
If you've beri-beri had,
You'll be very, very glad
After you have eaten B,
For improvement you will see.

Graham flour and husky rice,
Fruit and vegetables nice,
Milk and cheese contain the B
That will make you brave and free.
Eat 'em, drink 'em, bite 'em in,
If you want B-vitamin.

Now we come to vitamin-C,
Called the best of all the three.
If you'd "curvy" be
And from scurvy free,
Don't say it's no use.
Drink a quart of orange juice,
Or you may instead
Suck a large tomato red.
Eat 'em, drink 'em, bite 'em in,
If you want C-vitamin.

Cautious words in books profound
Say that vitamins abound
In the foods we'd scarce suspect.
So in eating don't neglect
Things the vitamins will give,
If you'd literally live.
Some they say will make you glad,
Healthy, lucky, thin, or sad
Whatsoe'er the letter be—
D or E or F or G,
H or I or maybe J,
Possibly it may be K,
L, M, N, O, P,
Q, R, S, or T,
Still it may be U or V.
Or it may be even Z.
Wise ones say the end's not yet
While we have the alphabet.

Lyman C. Newell.

—From *Industrial and Engineering Chemistry.*

SAMUEL BREWER'S DIARY:

A CHAPTER IN THE HISTORY OF BOTANICAL EXPLORATION IN NORTH WALES.

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INTRODUCTION.

Early in 1927 the herbarium and a number of botanical books belonging to Mr J. E. Griffith, of Bangor, were acquired by the Botanical Department of the National Museum of Wales. Several of the books had formerly been the property of Hugh Davies, author of *Welsh Botanology*, and among them was a small calf-bound volume inscribed on the outside " Welsh plants " and bearing on the title page the signature " H. Davies, 1776, F.L.S., 1790," followed by " R. Brisco Owen." Included in this volume are the following transcripts in Hugh Davies's handwriting:—

i. " Doctor Richardson's directions for Welch Plants to Dr John Jac. Dillenius." This is the letter " from Dr Richardson to Dr Sherard" published in the Richardson Correspondence (*Extracts from the Literary and Scientific Correspondence of Dr Richard Richardson, M.D., F.R.S.*, edited by Dawson Turner, Yarmouth, 1835, No. 96, p. 237) and there dated on internal evidence, 1st April 1726. In Hugh Davies's transcription the date is correctly given as May 7th, 1726 (cf. Druce, *Journ. Bot.*, xxii., 150, 1884).

ii. " Plants observed in a journey from London into North Wales by the way of Wiltshire, Somersetshire, Gloucestershire and Shropshire, by John Jacob Dillenius, M.D. et Prof. Botan. Oxon, in company with Mr Samuel Brewer, A.D. 1726." A version of this diary was published by Druce and Vines (*The Dillenian Herbaria. Oxford*, 1907; see below). Another, in some respects complementary, account of this journey in the form of a letter from Dillenius to Dr Richardson was published in the Richardson Correspondence (No. 100).

iii. " Mr Brewer's Diary, 1726-7," which forms the subject of the present communication.

Samuel Brewer. According to T. B. Flower (*Wiltshire Archaeological and Natural History Magazine*, xviii., 71-80, 1879) Samuel Brewer "was born at Trowbridge in 1670* and had a small estate in the county. After an ordinary school education he became engaged in the woollen manufactory of that town, where he proved very prosperous in business . . . After . . . some years . . . he became unsuccessful and devoted the remainder of his life to the study of natural history." However, that his interest in natural history and related studies developed fairly early in life is shown by his own account of a journey made in 1691 from Yorkshire to London ("Adversariorium hodoeporicum," a transcript of which (19 ff. 8vo.) is in the Kew Library†). He made this trip, as he records, in order to meet some of the famous men of his day and to examine for himself the best collections both of natural curiosities (including living plants) and books, and in every respect his wish seems to have been gratified. On the way to London he spent ten days at Oxford, five of them sightseeing at the ancient university, the remainder going about with "Mr Floyd, Keeper of the Museum" (evidently this is a mistranscription for "E. Lloyd," *i.e.*, Edward Lhuyd, the Welsh naturalist and antiquary, who had succeeded Dr Plot as Keeper in the previous year). While at the metropolis he made the acquaintance of, among others, Dr Pluckerd (Plukenet)—("I was informed he had the best hortus siccus in Europe")—and he made a special journey into Essex to see Mr Ray and "Mr Daile." Among the museum collections which he inspected were one at Wolerton Hall (presumably Wollaton Hall, Nottingham); Mr Coniers', "an apothecary" (in London); that of the Royal Society at Gresham College; and Mr Charlton's at Temple Barr, "the finest that ever I saw" (it included insects "kept in drawers covered with transparent glass," serpents, shells, "formed stones, medalles and coynes"). He noted the native plants growing beside the road at various places, so that although it may have been true that, as he told Sir Hans Sloane in 1729, he "never gathered any wild specimens till within these five or six years, nor never went a mile out of my way for them, till I went with Dr Dillenius into Wales" (*Sloane MSS.* 4050. f. 36), he was certainly not indifferent to them.

At the conclusion of the tour Brewer returned to Kendal and walked afoot home to Dokherah‡ Hall. It is a little difficult to reconcile this circumstance with the account, given above, of his having been engaged, apparently for a very considerable period after leaving school, in the woollen trade at Trowbridge. It may be conjectured, however, that he was concerned with the same trade at Kendal, which was long famous for its "green." Little or nothing seems to be known of the ensuing period of Brewer's life, but it was probably at this time there befell him the many misfortunes which weighed so heavily upon him in later years.

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*Flower authenticates this date by reference to an entry in the baptism registers in the parish church at Trowbridge.

†A note by the transcriber states that the original was in the possession of Miss Currer (the heiress of the Richardson estate) at Eshton Hall.

‡Mr S. O. Moffet, M.A., tells me that the modern spelling is "Dockray."

According to his account he suffered "great loss by fire, bad debts, some thousands by a partner and being barred by an elder brother and other relations from three or four considerable estates by unjustly cutting of entail" (*Sloane MSS.*, 4050, 36), and elsewhere he speaks of "the loss of £20,000 earned by the sweat of his braines" (*Sloane MSS.*, 4053, 30). The next event of which there is definite record is his botanical journey into Wales with Dillenius in 1726.

The two botanists travelled by way of Berkshire, Wiltshire, the Mendips, and Brean Down to Bristol, whence their route lay through Gloucester, Worcester, Shrewsbury and Bishops Castle. Here they were joined by Littleton Brown, "a young ingenious clergyman" (Dillenius' description v. *Rich. Corr.*, No. 109, p. 290), who, however, left them after the ascent of Cader Idris. They entered Wales near Newtown, and made their way via Llanidloes and Dolgelley to Cader Idris, after ascending which they visited Anglesey. Having spent six days on the island they returned to the mainland at Carnarvon and set out for Llanberis, en route for Snowdon. They had come provided with Richardson's "directions" (*Rich. Corr.*, No. 96): Dawson Turner's suggestion that this letter was written for Dillenius's benefit (but not actually to him) is born out by the sentence (given in Hugh Davies's transcript, not in the *Rich. Corr.* version): "I wish Dr Dillenius and his companions a pleasant journey, much satisfaction, etc."; moreover, after the tour was over Dillenius wrote to Richardson (*Rich. Corr.*, No. 100, p. 263) thanking him for his directions, "which were very useful to us." Dillenius' account of their ascent of Snowdon and Glyder (the greater part of which is missing from the version printed in the *Dillenian Herbaria*) proceeds as follows:—

August 20th. We walked up to Snowdon called Wyddfa; took our way by Lilston, where we met with plenty of *Acetosa folio rotundo in medio deliquium patiente* [*Oxyria digyna* Hill]. *Gladiolus lacustris* [*Lobelia Dortmanna* L.], *Subularia repens folio minus rigido* [*Littorella juncea* Berg.] in the lake Llyn-cwmm-y-ffynnon-felan; the other small lake a little above this call'd Ffynnon-frech, where the *Subularia vulgaris* [*Isoetes lacustris* L.] is said to grow, and no where else, we did not examine, being in haste to get up; a little above this lake was great plenty of *Adiantum album crispum alpinum* Schw. [*Cryptogramme crispa* Br.]. *Selago* [*Lycopodium Selago* L.], *Selaginoides* [*Selaginella Selaginoides* Gray], *Lycopodium foliis sabinae* [*L. alpinum* L.] were common plants above and below these lakes. A little higher among the wet rocks *Thalictrum minimum* [*Thalictrum alpinum* L.]; *Lychnis alpina* [*Silene acaulis* L.], especially towards Crib-gôch, which is the best way to go up for variety of plants. Towards the top we found *Serpyllum hirsutius fruticosum* [*Thymus Serpyllum* L.]; and at the top amongst other mosses *Muscus islandicus purgans* [*Cetraria islandica* L.]: *Alsine villosa flore magno* [*Cerastium alpinum*, var. *lanatum* Lam. ?], *Saxifraga hirsuta foliis oblongo rotundis*. Upon the Glyder grows plentifully *Cochlearia minor rotundifolia* Merr. [*Cochlearia alpina* Wats.] à marina rotundifolia Park. specie vix differt; the leaves of the *montana* are more shining and the whole plant somewhat bigger; *Cochlearia vulgaris* [*Cochlearia officinalis* L.] amongst the wet rocks of Crib-gôch is common, as also upon the Glyder in some places; the leaf of this is more shining than when it grows by the sea side, thinner and more hollow. When we got to the top of Snowdon the weather that was very fair in the morning changed and was very foggy, which made our further search fruitless and we returned very late.

August 21st. We rested.

August 22nd. We went to Glyder. At the bottom we found *Conferva ramosa lubrica* and *Graminifolia lacustris prolifera* [*Pilularia globulifera* L.]. In our way to the old woman's cave we looked for *Hieracium pulmonaria latifolia minus uno vel altero flore* [*Hieracium argenteum* Fries ?], and found nothing else than a variety of the common *fruticosum latifolium hirsutum*. We ascended the Glyder, a mountain that lies on the other side of the river over against Crib-gôch; a little lower than this in a lake Lyn y Cwn grows, besides the *Subularia vulgaris rigida* [*Isoetes lacustris* L.] and *Graminifolia* [*Pilularia globulifera* L.], and *Subularia repens folio minus rigido* [*Littorella juncea* Berg.], *Graminifolia thlaspeos capitulis*, all not yet known to grow in England. According to the directions we could not find the *Hieracium* said to grow there, nor the *Virga aurea* [*Solidago Virgaurea* L.], but instead of this *Lycopodium foliis juniperinis* [*L. annotinum* L.] and *Lichenastrum argenteum*.

August 23rd. We rested and shifted our plants, the same day in the afternoon took a little walk about Llanberrys; a little above the church by the wayside grows *Gentianella flore semper tetrapetaloide* Hist. Lugd. [*Gentiana campestris* L.] fig. calyce ex duobis foliis majoribus et totidem minoribus conflato. In the lake below the bridge a quarter of a mile from Llanberris grows *Subularia erecta folio tenuiore et longiore* [? *Subularia aquatica*] very different from the other sorts; *Papaver luteum perenne* [*Meconopsis cambrica*]; *Gladiolus lacustris* [*Lobelia Dortmanna*]. No flower or seeds upon the *Subularia rigida*.

August 25th. Rainy weather.

According to Pulteney (II., 188) the two botanists went next to Ireland; Brewer spent the winter and the greater part of the following year in North Wales, and his experiences during the latter part of his stay in the principality are described in detail in the Diary which follows. He was almost entirely occupied with collecting plants, parcels of which he sent periodically to Dillenius. The latter's acknowledgments and his requests for further material and for information on special parts are contained in letters preserved at South Kensington (*Letters*, ff. 1-12). Thus, on 14th March 1726-7,* he wrote (f. 6): " I think you have done a great deal this season and more than could be expected. All you have found new or shall find hereafter it shall be mentioned in your name. There is needed a good apparatus for an Appendix to lower kinds of plants."

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*At this period, January 1st had not been universally adopted as the first day of a new year: in England and Wales the old style (with March 25th as New Year's Day) was still adhered to—hence the practice of giving alternate year dates during January, February and March.

It was evidently arranged that Dillenius should have a complete set of Brewer's Welsh gatherings in return for naming them and that the remainder should be returned to the collector; yet little more than a year after his return from Wales Brewer was complaining that Dillenius was not keeping to the bargain, but had dispersed several specimens into Consul Sherard's collection and wished to withhold the names of the remainder until the conclusion of the *Pinax* on which he was engaged, " may be," as Brewer wails, " 10 or 20 years after I am rotten in my grave " (*Sloane MSS.*, 4050, f. 1). (His fears had some justification, as Dillenius left the *Pinax* unfinished and it was never published.) The dispute led to an open breach between the former friends and they did not resume relations until 1741 (*Letters*, f. 84. Thomas Knowlton to Samuel Brewer). Brewer must ultimately have secured possession of the greater number of his specimens for, as is recorded in letters preserved at the British Museum (*Sloane MSS.*, 4051, f. 267, and 4052, f. 158), he sent two parcels of Welsh plants to Sir Hans Sloane in 1731 and 1732 respectively. These are presumably the specimens now in Herb. Sloane. Thus, those in Vol. 229 (ff. 45-60) form a " collection of fuci, sponges, etc., from Samuel Brewer collected by him in North Wales. The labels are in his own hand writing. He was assisted by Dillenius in naming them." The circumstances in which many of these specimens were obtained are related in the Diary. Other specimens of Brewer's are in Vol. 231 (ff. 33-67; these were collected jointly with Dillenius, and comparatively few are localised) and in Vol. 293 (seaweeds from Wales, in ff. 54-55). The specimens at South Kensington duplicate, but only to a certain extent, the completely representative series of Brewer's plants retained by Dillenius and now preserved in the Dillenian Herbaria at Oxford.

Brewer probably followed Dillenius' advice (given in a letter written on September 30th, 1727) not to " stay too long in Wales but to get out of the difficult country before the bad weather set in," for it is evident from the Richardson letters that already in November 1727 he had gone to stay at the house of his friend, Dr R. Richardson, at North Bierley, near Bradford: later he took a house of his own in the district, and his correspondence shows that he lived there continuously until 1742. During this period he was evidently in poor circumstances. He was glad to accept the presents of money which Sir Hans Sloane made him in return for specimens and for drawings of seaweeds: thus Sir Hans sent him £5 in August 1732 in return for a parcel of 80 plants (Nicholson, p. 286, cf. *Sloane MSS.*, 4052, f. 158). He had perforce to act as his " own cook, baker and chambermaid," and though he had " a strong itching to go to Craven yt is so remarkable for plants and fossils " and would have liked to explore " the neighbouring seas " his means would not allow of so much travelling. To these and the troubles already referred to were now added the dismissal of his son from the service of the (? East India) Company and "the undutifulness of a daughter." His garden seems to have been almost his only consolation.

By 1742 Brewer was 72 years of age, and it is a little difficult to believe that he afterwards became head gardener to the Duke of Beaufort at Badminton,* as recorded by Nichols (on the authority of a member of the Richardson family) and repeated by the D.N.B. The same writer states that Brewer died at Bierley and was buried at Cleckheaton, but omits to mention the date (Nichols, p. 288). It is further related that "his valuable collections of plants and seaweeds . . . collected and dried by himself . . . were purchased of him a little before his death by Richard Richardson for £20, though some years before he had refused £100 offered for them from Sir Hans Sloane" (Nichols, *l.c.*). It is possible therefore that another set of Brewer's Welsh plants is waiting to be rediscovered: if this should happen the plants would find their most appropriate home in the National Museum of Wales.

Dawson Turner (*Rich. Corr.*, p. 276, footnote) sums up Brewer as "an uneducated man and one of a low station in society," a judgment which is on the whole consistent with the impression derived from the Diary and from his correspondence. Thus, he had a certain facility in the use of Latin, but his descriptions of new plants, written in that language, are not always grammatically correct. But the evident regard in which he was held by Dr Richard Richardson and certain other contemporaries tells very strongly in his favour; and it is abundantly clear that he was a keen observer and a most persevering collector, so intent on his work that, as he says, his misfortunes seldom made any impression on him when out in the air. Dillenius wrote in 1728: "He has done me a great deal of service; and I am sure I shall never meet with a better searcher, especially for mosses. When we travelled together in Wales in all the badeness and violency of weather and rain he would stop and pick up mosses" (*Rich. Corr.* cix., p. 290). He provides yet one more example of a man who, in spite of the defects of his early training, was able by sheer enthusiasm to carve for himself a niche in the temple of botanical fame. His name has been given to a genus (*Breweria* Robert Brown) and a species (*Helianthemum Breweri* Planchon).

THE DIARY. The existence of Brewer's Diary must have been known to Pulteney, who refers (II., p. 189) to Brewer's botanical collaborators, the Rev. Mr Green and William Jones. But the earliest explicit reference to the Diary known to the writer is contained in C. B. Clarke's papers on the "Earliest Records of British Plants," where there is an allusion to a manuscript "Botanical Journey" by Brewer (*Journ. Bot.*, xxx., 120, 1892); later Clarke quoted Brewer's account of his discovery of *Elisma natans*, near Llanberis (*Journ. Bot.*, xxxiv., p. 84, 1896; cf. *Diary* under July 21st). J. E. Griffith (*Flora*, p. 78) refers to "Mr Brewer's MSS. Diary which I now possess," and quotes Brewer's reference to his discovery of *Diotis maritima* and also Hugh Davies's later note on the same species (*Diary*, September 3rd). Short quotations have also been published by G. C. Druce (see under August 7th) and J. Britten (see under July 10th). Reference was made to Brewer's "Botanical Journey through Wales" in an Appendix (B, by D. Lleufer Thomas) to the Report of the Royal Commission on Land in Wales and Monmouthshire, 1896 (cf. *Journ. Bot.*, xxxvi., p. 10, 1898, where the Baestrom MS. referred to below is erroneously ascribed to Solander); and T. K. Rees (*Journ. Linn. Soc.*, xlvii., 287, 1925) has summarised Brewer's account of seaweeds collected by or for him.

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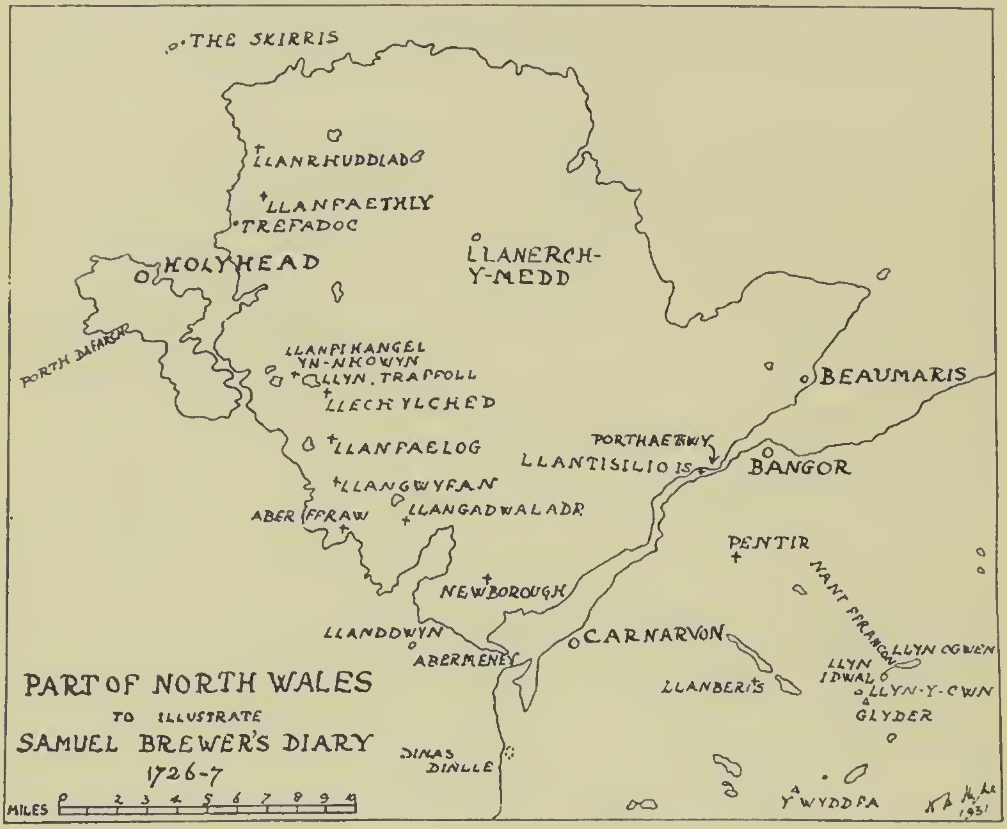
*An interesting sidelight is thrown on to Brewer in the role of gardener by the following entry in a bookseller's catalogue issued recently: Cultivation of Auriculas and Carnations with Hints as to the Management of the Tulip, the Ranunculus, the Polyanthus, and other Flowers, copied from the rough first draft of Samuel Brewer, by his little son, pp. 119 folio. £15 15s. (In a book catalogue of J. H. Knowles, Spring 1929.)

The original *Diary* was presumably compiled day by day, but that subsequent additions may have been made by the author is suggested by the words "though Dr Richardson says we were upon the very rock" (see under July 10th), which read like an interpolation made after Brewer had discussed the incident with Richardson. No copy of the *Diary* in Brewer's handwriting seems to be in existence, but two transcripts are known: (i) in the handwriting of Sigismund Baestrom; this copy is entitled "Samuel Brewer's Botanical Journey through Wales in the Year 1726;" it was formerly the property of Sir Joseph Banks and bears his signature on the title-page; it is now in the Department of Botany, Natural History Museum, Cromwell Road; with one exception (Griffith) all the allusions above-mentioned are to this MS.; and (ii) in the handwriting of Hugh Davies; this MS., which, as already stated, is in the Department of Botany, National Museum of Wales, Cardiff, is the "MSS. Diary" quoted by Griffith. These two versions have been compared, word for word, by the writer. The Davies transcript (D. MS.) has been used as the basis of the version now published, and important variations therefrom noted in the Baestrom transcript (B. MS.) have been referred to in the notes given in brackets. It is apparent from internal evidence that the two transcripts were made independently from a pre-existing text: thus Baestrom copied an entry for March 11th which Davies entirely omitted, but on the other hand Davies's version contains a sentence under March 13th which is missing from Baestrom's.

Most of the flowering plants and ferns referred to by Brewer have been identified by reference to *The Dillenian Herbaria*, which is indispensable to the student of early eighteenth century botany. Brewer's references to lichens and mosses are rather obscure, which was only to be expected, as many of his specimens represent species previously unknown. It was hoped that an examination of the actual specimens in the Dillenian collections at Oxford might elucidate these references, but it was found that the data were quite insufficient to permit of this. Almost every available item of information as to provenance has been published in *The Dillenian Herbaria*, but in regard to the mosses and lichens comparatively little is known, as the Herbarium of the Historia Muscorum is almost exclusively a series of unlocalised, undated type specimens. However, when the number of allusions in the *Diary* to gatherings of " mosses " and Dillenius' own remark as to Brewer's assiduity in collecting these plants are considered, it seems certain that a large proportion of the lower cryptogams in the Dillenian Herbaria must have been collected by Brewer. The majority of the characteristic flowering plants and ferns of North Wales had been observed and recorded before Brewer's day; but a number, chiefly of the commoner plants of both Carnarvonshire and Anglesey, do not seem to have been noted by any earlier observer: these apparent " earliest records " for the two vice-counties are indicated by an asterisk (*). Many of the places referred to in the *Diary* are marked in the accompanying sketch map.


THE SKIRRIS
LLANRHUDDLAD
LLANFAETHLY
TREFADOC
HOLYHEAD
LLANERCH-Y-MEDD
PORTH DAFARCH
LLANFIHANGEL YN-NHOWYN
LLYN. TRAFFOLL
LLECHYLCHED
LLANFAELOG
LLANGWYFAN
LLANGADWALADR
ABERFFRAW
PORTHAETHWY
LLANTISILIO IS
BEAUMARIS
BANGOR
PENTIR
NANT FRANCON
LLYN OGWEN
LLYN IDWAL
LLYN-Y-CWN
GLYDER
NEWBOROUGH
LLANDDWYN
ABERMENEY
CARNARVON
LLANBERIS
DINAS DINLLE
Y WYDDFA
PART OF NORTH WALES
TO ILLUSTRATE
SAMUEL BREWER'S DIARY
1726-7
MILES 0 2 3 4 5 6 7 8 9 10
1931

Brewer, following the usual pre-Linnean practice, quotes the abbreviated title of the works to which he refers: the full titles of these, and also of works referred to by the present writer, will be found at the end.

I am indebted to the Director, British Museum, for permission to examine Brewer's letters in the Sloane Collection; to the Keeper of Botany, British Museum (Natural History), for allowing me to make notes from the Baestrom transcript and from Brewer's specimens in

Herb. Sloane; to the Keeper of the Kew Herbarium for facilities in consulting *Adversariorum Hodoeporicum*, and to Professor A. G. Tansley for similar facilities in regard to the Dillenian Herbaria at Oxford; I should like to acknowledge the kindness of Mr J. Ardagh in directing me to sources of information concerning Brewer, and, finally, I have to thank the Council of the National Museum of Wales for the use of Hugh Davies's MSS.

MR BREWER'S DIARY.—[33].*

1726-7.

February 26. I went out into the woods about Penrhyn house near Bangor formerly the seat of Archbishop Williams; this day Mr Warburton was buried from that seat, the moiety of which came to him by his Lady a relation of the said Archbishop, the other moiety belonging to Walter Young's Lady they being co-heiresses of this estate. *Lichenoides crustaceum* seems to differ from any I have yet seen. *Lichenoides arboreum foliosum ex. cinereo glaucum, superne laeve inferne scabrum, in scutella* [=? *Stictina scrobiculata* Scop.]. *Byssus.* A kind of wild flax. *Lichenastrum* in a deep ditch where much water runneth down by Melinescob. Near Bangor a fern.

March 3rd. I took from the same place a short walk over the mountains towards Pandu-maes-y-geirchan, a tucking mill in Bangor parish, and found—[34]—at the side of a rill running down the hill into the river *Lichen petraeus pileatus* R. Syn. 114 N. 1. [**Fegatella conica* Corda.] in head; a *Lichenastrum* also in head, and a Bryum. I followed the river called Afon-cegin 'till I came to Aber-cegin, and searched the rocks facing the sea called Bryn-cegin and followed the shore till I came to Hiran, where the storehouses are, all in the parish of Bangor, and found the undermentioned mosses. [None are given.] By the side of Afon-cegin I observed great plenty of *Lichen* and *Lichenastrum* in head as before.

March 4th. Wm. Jones brought me the mosses from a deep ditch near the Palace Garden in Bangor as mentioned underneath. [But again no list of mosses is given].

March 5th. [B. MS. here interpolates: Wm. Jones and I took a short walk and] I found in the deep ditches in the Palace Garden upon rotten wood almost buried *Peziza miniata major* [**Humaria granulata* Sacc.] almost two inches over, and a small *Lichenastrum*. At the foot of trees a Mushroom or Fungus without stalk or root; and just before —[35]—we came to Sily-wen where Thos. Price liveth, a quack Doctor who knoweth a good many physical plants, between Garth and

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*The numbers given in brackets (*e.g.*,—[38]—) correspond with the pagination of Hugh Davies's MS.

Porthaethwy-ferry, under the rocks, almost upon the ground I found *Lichen petraeus stellatus* [**Marchantia polymorpha* L.]; the under part of the leaf is purple, on the middle of each leaf there riseth upon short pedicels a green head or cap divided into five or six segments which covereth a sort of seed vessel divided into four in the shape of a star, and reacheth almost to the bottom of the pedicle; these heads at first sit close upon the leaf, of a purple color like a vetch.

March 7th. I took a walk over the mountains to the river Afon-cegin and between the two Mills called Pandu-maes-y-geirehan and Melin-Esgob, the first a fulling mill the other for corn, I found upon the stones sticking in bunches *Conferva nodosa*; River Sponge a little divided of a dark-green color. N.B. the tides never reach it.—[36]—In the same river a plant with the face of a Chara but without flower or seed and also a *Stellaria* (Starwort or a kind of Aster) Syn. 289. 1. but not being in flower and having never observed it before in this state, I am not certain tho' it is a very common plant.

[B. MS. proceeds "March 11th. W. Jones and I went over Pont Marchogion in the woods which lye between the bridge and Penrhyn House near Bangor and found the several mosses numbered underneath." No numbered list is given, however].

March 13th. Wm. Jones and I went over into Anglesea by Porthaethwy and searched all the rocks thereabouts for mosses but found them all dried up. [B. MS.: From thence] we walked towards Beaumares but reached no further than my Lord Bulkeley's upper Park; I looked for the curious branched moss that I found before at the foot of the rock, just by the hedge near Robert Jones's house the Chester carrier at Llandegfan.

In a rill running down the hill just as we came into Lord Bulkeley's Park I found *Petasites* R.S. 179. [**P. officinalis* Moench] and in the same place the mosses as under. From thence we returned to Porthaethwy and searched—[37]—the watery holes upon the rocks that can never be come at but at the lowest ebb, which lie about the Church called Llandisilio formerly served by the famous Antiquary Wm. Rowlands; over these rocks called Llandisilio rocks, he says that Julius Agricola invaded this Island. I never saw before so great a variety of *Conferva*, *Coralinae*, and *Fucoides*, as I found in this place; nor so pleasant a sight by the great variety of color and structure in one hole or pool. [B. MS. adds: those I took of them are numbered as underneath.] This pool is at the foot of a small rocky island called Ynys-y-Moch, which signifies the pigs' island, it lies between Porthaethwy and Llandisilio rocks; upon one of these rocks (that is an island at very low ebb) I found *Atriplex maritima fruticosa, Halimus et portulaca marina dicta* R.S. [153] N. 11 [**Atriplex portulacoides* L.]

March 15th. Thomas Price the conjurer brought me the undermentioned from the wears he renteth of the Bp of Bangor, called Ynysfadoc-goch,—[38]—out of the watery places there; an olive-colored sea Garlic, a yellow branched seaweed when laid first upon the paper out of the water it appeared round and tubulous like small guts of a slimy substance. [B. MS. adds: Another very much like the last mentioned except its not being so much branched as that is.]

March 16th. From Mr Green the undermentioned mosses [here is a gap in the transcript] this with *Lichenastrum* leaves hath brown dusky heads like the 1st Meum or Bald-money.

March 24th. William Jones and I left Bangor for Llanfaethly, and went by Llanerch-y-medd, where was a fair kept; I bought me a pair of spectacles and a box for my magnifying glass, and got to Llanfaethly the same night by six (tho' two miles by the round). We walked so very fast that we observed nothing by the way except a *Conferva globosa* near the bridge that leadeth over Afon-Alaw, about two miles before we came to Llanfaethly. In watery holes on the rocks called Trwyn-hir, which signifies a—[39]—long nose or point, we found several curious *Conferva*, *Fucoides* and *Corallinae* as numbered &c. And in the watery holes on the rocks called Carreg-hanner-trai which signifies a rock that appears at half ebb, we found several other curious *Confervae*, *Fucoides*, and *Corallinae*.

March 27th. At the point called Trwyn y clegir, in the Parish of Llanrhuddlad, we found in great plenty *Fucus phyllitidis folio* [**Laminaria saccharina* f. *Phyllitidis* Le Jol.], or Mor-dowys, and great plenty of a Fucus that is called everywhere in N. Wales Dilesh [**Dilsea edulis* Stackh.]; but different from that in R. Syn. and a great many [B. MS. interpolates: old and] seedling plants of sea-laces [**Chorda Filum* Stackh.].

In the watery places upon the highest rocks called Llechau-llyfnion, which signifies smooth slates, just by Trefadoc in the Parish of Llanfaethly we found sticking to the sides of the rocks, covered over with common fucus, *Fucus s. Alga folio membranaceo purpureo*, Lapa—[40]—*thi sanguinei figura et magnitudine*, R. Syn. [*Phycodrys rubens*, Batt. (*Delesseria sinuosa* Lam.)]. We first observed it upon the rocks between Gardd-y-feddyges which signifies the Doctress's Garden, and the point called Trwyn-hîr; and a little beyond a large creek in the rocks about forty yards long, at the end of which is the finest cave I ever saw adorned on the sides and crown, very thick set, with *Chamaefilix marina anglica* [*Asplenium marinum* L.] and a Lichen with some other curious plants. The cave is so large that eight couple might dance in it, and about it I found a very beautiful Fucus with an Ilex leaf set alternately, *Fucus membranaceus purpureus nunc Ilicis nunc Quercus folio* [This name does not occur either in R. Syn. or elsewhere in print but it does occur in a label in Brewer's handwriting attached to a specimen of *Phycodrys rubens* Batt. (*Delesseria sinuosa* Lam.) in the Herbarium of the Synopsis at Oxford. Brewer says of this specimen " If it is new as I suppose it is pray let it be called Fucus membranaceus,'' etc., as given in the Diary. Another specimen of the same alga, also labelled by Brewer, is at S. Kensington]; and in a small spring walled in, in a strait line, and about the midway between the Parsonage-house and Trefadoc, I found *Conferra fontana nodosa pulcherrime nigricans* [? *Batrachospermum atrum* Harv.]; the well is called Ffynnon-bach-y-llysg in a field called Gors-bach.—[41]—Note that the pedicles only of the young plants of *Fucus arboreus polyschides edulis* C.B. Pin. R.S. [*Sacchorhiza polyschides* Batt.] are eaten by the Welsh who call them Ym-rwal.

April 5th, 1727. Wm. Jones and I went from Llanfaethly to the point called Trwyn-y-clegir. Upon the rocks facing the sea (upon the rocks and heath that grows there) I found *Muscus aureus tenuissimus* Merr. Pin. [*Telochistes flavicans* Norm.] and upon the rocks facing the sea a little further towards the Skirris or lighthouse rock, I found in flower great plenty of *Hyacinthus stellatus* [*Scilla verna* Huds.] which is not above two inches high with from two to six leaves, the petals divided into six segments of a blue color and as many stamina tipped with purple and a pointal in the middle, it makes a pretty appearance and resembles the double hepatica.

April 6th. We left Llanfaethly and by four in the afternoon got to Bangor; the first thing I observed in the way, was in the water a little before we came to Llechgynfarwydd—[42]—a *Ranunculus* in flower and fruit, and in a little rill past Rhyd-gariadog I found a grass-leaved plant fortè a *Potamogeton*; and under a house in Bodfordd by the wayside, I found a green moss upon the ground formed like a *Lichenoides foliosum* of a very tender texture.

April 7th. Thos. Price brought me from his wiers called Ynysfadoc-goch *Spongia ramosa* Syn. 29. 1. [*Chalina oculata* Pallas.], a large green *Fucus* of a spongy texture very much divided, blunted at the top, and is partly round, as big as a common reed. A *Spongia dichotoma tereti-folia viridis* R.S. 29. 3. a Fucus of a fleshy substance like a cock's comb, cut and divided several ways, a large prickly shellfish of the shape and work of a button.

April 8th. Wm. Jones and I went with Thos. Price to Ynys-fadoc-goch, the British island and some other little islands adjacent between Porthaethwy and Moel-y-don where we found *Fu*—[43]—*cus spongiosus nodosus* [? *Ascophyllum nodosum*, Le Jol.], and also a *Fucus* shaped like a kidney, some of a bluish color, and others variegated like marble with sand-color and blue, and also the *Fucus* with oak-leaves.

May 20th. Wm. Jones and I took a small walk about Bangor, and in the meadows below the free-school [B. MS. interpolates: "called the Fryers"], and on the other side of the river towards the sea, I found great plenty of *Pentaphyllum palustre rubrum crassis et villosis foliis Suecicum et Hibernicum* R. Syn. [*Potentilla palustris* Scop. var. *villosa*

Lehm.] and great plenty in fine state of *Salix pumila foliis utrinque candicantibus et lanuginosis* C.B. [*S. repens* L.], *Muscus palustris adianta aureo affinis scapis tenuioribus foliis brevibus*, R.S. 98. 32. [**Philonotis fontana* Brid.] and the 1st and 2nd *Polytrichum* [*P. commune* L. and *P. juniperinum* Willd.] in a very fine state.

May 29th. We left Bangor accompanied by the Rev. Mr Green; on our way to Perfedd-goed in the watery, boggy places and rills about Mr Parry's house we often saw *Pentaphyllum*—[44]—*palustre rubrum crassis* &c. [*Potentilla palustris* Scop. var. *villosa* Lehm.] and *Pentaphylloides palustre rubrum* [*Potentilla palustris* Scop.] growing together and found the new mosses I went thither for.

June 1st. I came to Pentir; this morning Wm. Green and I went towards the mountains from his Uncle's Mr Williams and found the Widgeon-headed colored *Bryum capitulis reflexis* in head and *Hypnum* which new mosses I went chiefly after, and in a large inclosure, rented by Mr Doulben of Bangor, called Cae'r-gôf, which signifies the smith's field we found several pretty new mosses in the rills that come from the head of the ground; and, amongst the grass near the said rills, great plenty of *Selaginoides* [*Selaginella Selaginoides* Gray] in good state; several sorts of grasses, and, in the most fertile part of the ground, great plenty of *Lunaria minor* [**Botrychium Lunaria* Swartz.] in a very good state; and in the said rills a small red hyssop-leaved plant coming into flower; and returning from the Turfery upon—[45]—the mountains amongst the heath, and always upon neat's dung, we found a very strange *Bryum capitulis erectis*, shaped like an urn with very large capitulum, and a round thyme leaf; and on both sides the river, before and after we came to the Mill called Pentir mill, we found great plenty of *Osmunda* in a very beautifull state at least five feet high [B. MS. adds: and no doubt but it will rise 2 feet higher before winter], and, in a dry field amongst broom, the greatest plenty I ever saw of *Orobanche* R. Syn. 1st., [**O. Rapum-Genistae* Thuill.], and a beautiful purple one; and on the bogs about half a mile from Mr Williams's house *Oxycoccus* [**Vaccinum Oxycoccus* L.] in flower and fruit.

June 2nd. I left Pentir and was accompanied by Mr Green to Trigfylchau rocks, where we met with *Ranunculus globosus*, [*Trollius europaeus* L.]; and *Cirsium* [*Saussurea alpina* DC.]; *Saxifraga Ericoides* [*Saxifraga oppositifolia* L.] in flower, but very rarely being too late; *Saxifraga trifida*; and *Alsine pulchro flore tenuifolio*, in flower; I think *Lychnis saxatilis juniperi folio* [*Arenaria verna* L., cf. *Dill. Herb.*, p. 107]; Tournefort's *Empetrum* [**Empetrum nigrum* L.]; *Papaver perenne laciniato folio* [*Meconopsis cambrica* Vig.];—[46]—*Lychnis alpina minima* [*Silene acaulis* Jacq.]; single headed *Gramen lanuginosum* on Waengynfil, a large turfary [sic] above Pentir, with other grasses, *Hieracium* by some called Lungwort, and a small grass; on the top of the house that stands at the upper end of Nantffrancon great apple-headed Moss in head and stars also. This night we lay at a house on the east end of Llyn-Ogwyn called Tal-llyn-Ogwen; this house lies above the horses road that leads over Benglog to Llanrwst; about north-east of it and the pool we found also *Caryophyllata purpurea montana* [*Geum rivale* L.] with a very beautiful double flower which Mr Green transplanted to his Uncle's garden at Pentir. [Trigfylchau, the scene of this and the following days' chief activities, is mentioned repeatedly in the *Synopsis* but, beyond the fact that it is a spur of the Glyder Fawr, its exact position seems not to have been determined.]

Sat. June the 3rd. Mr Green and I went again to Trigfylchau in search of *Bulbosa alpina* [*Lloydia serotina* Reichb., no specimen of which is in the Dillenian collections] which as yesterday proved fruitless, tho' we observed the directions of both Dr Richardson's letters [Hugh Davies's transcription of "Dr Richardson's directions for Welch Plants," — afterwards published in *Correspondence of Richard Richardson*, ed. Dawson Turner, 1835, pp. 237-246—containing detailed reference to this plant, is bound up with the *Diary*], but found the plants undermentioned, *Gnaphalium* [probably *Antennaria dioica* Gaertn., of which Brewer sent a specimen to Dillenius; v. *Dill. Herb.*, p. 65], a handed *Orchis* with a green flower very dif—[47]—ferent in its structure from any that I yet saw, *Rubia*, *Bistorta*, *Consolida*.—Here Mr Green left me.

Sunday June 4th. I went from Tal-llyn-Ogwen to Llanberrys, but returned the same day; I met with in the ground where Mr Griffith's house is and near his house, being part of the estate that Mr Evans rented, a *Ranunculus pratensis repens* [*Ranunculus repens* L.*], with a double flower and in our return almost upon the top of the mountain called [here is a blank space] I found a large branched *Polytrichum*, with round capsules and a laciniated calyptra reaching down about halfway of the capsule.

Monday June 5th. [B. MS. reads: "Mr Rowlands being expected at Tal Llyn Ogwen I could not go far from the house but sent my guide to Trygfylchau after *Bulbosa* having shewed him the figure of the plant and gave him a small rush plant about the size. I also gave him Dr Richardson's Direction to find it, but he returned at night without finding that or anything else." D. MS. continues] In my walk this day I found all the sorts of *Subularia* except the 4th in Llyn-Ogwen; the 1st and 3rd cast upon the shore in great quantities and larger than ever I saw it. The horses ate very greedily of that which was cast ashore, and that in the water, and the people tell me that they wait there every day for it, and leave good grass that grows near it; and that the—[48]—fish love it as well, that they are larger there than in any of the other lakes, which they attribute to their eating the Subularia which they call Gwair Merllyn; Gwair is hay and Merllyn a Welch Prophet. The 2nd *Subularia* in the Syn. looks rusty and decaying, which makes me think that it dies to the root every winter. [In *Dill. Herb.* the Subularias are identified as—1, *Isoetes lacustris* L.; 2, *Littorella juncea* Berg.; 3, *Isoetes lacustris* L., var. *fragilis* Gray. An expanded account of the last-named, by Brewer, is also given, together with his correction of the translation of Gwair Merllyn: he explains that in his previous letter—and, we may add, in the *Diary*—he had the meanings of the two words transposed].

Tuesday June 6th. The weather being very bad and I not willing to keep Mr and Mrs Rowlands out of their bed (being come to see the sheep and goat shearing) I left Tal-llyn-Ogwen and returned to Bangor.

June 12th. I left Bangor and went that night to John Davies at Cwmbrwynog, near the old Castle at Llanberris; the plants observed by the way were as follows, at Pentir a *Bryum capitulis reflexis* with red pedicles and heads, and a hairy leaf; a *Phalangium* [presumably **Narthecium ossifragum* Huds.] in flower (an herb that cureth the venemous [sic] bites of spiders of that name), *Nummularia flore purpureo* [*Nummularia minor flore purpurascente*, Syn. 283, 2 = **Anagallis tenella* Murr.] money wort or herb two-pence; a kind of centimorbia or all-heal; two sorts of Alsine with purslane leaves—[49]—out of water near Pentir; I found upon the mountains just before we crossed the Lakes a small *Salix* with a more round leaf than the sandwich willow, in other respects like it.

June 13th. Richd. Parry and I went to the top of the rocks called Clogwyn-du-yr-arddu; and the rocks that join to ym where we found *Dens leonis montanus angustifolius* Syn. [presumably *Taraxacum palustre*, DC., cf. *Dill. Herb.*, p. 63, where the original label is quoted thus: From ye high rocks above Llyn Coron y Fynnon Velen I could not meet with any of it in flower, Mr Br, who took it for Syn. 171. 4 but it is nothing but a variety of the common]; *Nasturtium saxatile* Ger. [Bacstrom's transcription adds "stone cress." = *Arabis petraea* Lam.] in flower; a small Ranunculus that seldom beareth more than one flower, and never more than two; *Oxys* [*Oxalis acetosella* L.] in flower and fruit; *Thalictrum montanum minus foliis latioribus* R. Syn. [Possibly *T. montanum* Wallr., but the specimens from the same locality ascribed in *Dill. Herb.* (p. 70) to this species were collected in September, and therefore cannot be those here referred to] hath berries like Argentine, leaves like coriander, and stalks like poppy. *Thalictrum minimum montanum atro-rubens foliis splendentibus* R. Syn. [*Thalictrum alpinum* L.]. A coffee colored *Lichenastrum* that Dr Dillenius took last year in this country but not then in head, in viewing it with a magnifying glass some of the—[50]—heads looked like the seed pod of an Auricula growing in the top of the leaf, and other heads divided into four segments as the other Lichenastra are.

June 14th. Richard Parry and I walked to Wyddfa and searched the other part of Clogwyn-y-Garnedd and found the undermentioned plants: *Cirsium polyanthemum* Syn. 193. [*Saussurea alpina* DC.] coming into flower, *Selago* [*Lycopodium Selago* L.] and old plants with fresh branches breaking out of the decayed ones, which sheweth it is perennial; *Alsine* with its leaves a little curled; one plant in flower of *Saxifraga foliis oblongis rotundis dentatis, floribus compactis*, R.S. [*S. nivalis* L.], from the upper stones of Clogwyn-y-Garnedd, *Alsine myosotis lanuginosa alpina grandiflora* [Bacstrom MS. adds "amplomembranoceo;" presumably *Cerastium alpinum* L., var. *lanatum* Lam., although the only modern record of this plant relates to Carnedd Llewelyn: cf. *Flora*, p. 22] this I observed in the same place that I found it in the last year, but in so weak a state that I could not take an example of it.

June 15th. Richard Parry and I went from our lodgings towards Carnarvon—[51]—in search, but in vain, for *Orchis pusilla alba odorata, radice palmata* [*Herminium albida* R. Br.] and met with nothing remarkable, but upon a bog near Mr Williams's house (the farm called Llwyn-Celyn) a very stiff, round and crested stalked *Hieracium* that I do not know, and a Gramen near the farmhouse called Hafod-ty-newydd, which signifies the new dairy-house, in flower, with the appearance of a calyx cut into six segments and set around with as many stamina, each of them having apices sitting upon them, and a pointal in the middle with an apex upon it also, and near the same place in the water an *Alsine* with a purslane leaf, with white petals.

June 16th. Richard Parry and I went to Ogof Clogwyn-dû'r-arddu to search the cave for *Adiantum an album tenuifolium ruta-murariae accedens*, J.B. [In *Dill. Herb.* an unlocalised specimen numbered to correspond with this species is identified as *Asplenium Ruta-muraria* L., var. *majus* Gray.] which proved fruitless, we found there after great fatigue to get up, nothing but—[52]—what grew within an easy reach thereabouts except a round-headed *Bryum* that seemeth to differ from the 2nd Syn. and a *Hypnum* with a *Trichomanes* leaf; and in a shaking bog by the river-side, that cometh from Clogwyn-dû'r-arddu and a little before we came opposite to my Landlord's dairy-house called Helfa-fawr, a sort of rush rising up with a stalk set with a small imperfect flower, which appears by viewing thro' a magnifying glass, to have a calyx one double cut into three segments and a pointal rising up in the middle, thick set on top, with small threads; I suppose 'tis the *Juncago palustris et vulgaris*, R.S. [**Triglochin palustre* L.] and in the river I found in several places *Ranunculus aquatilis*, Ger. Em. R.S. with a double flower, and great plenty of *Subularia repens folio minus rigido*. [*Littorella juncea* Berg. B. MS. proceeds: "In the same river but at a good distance the same *Ranunculus* with a single flower, and great plenty of *Subularia repens*. I was forced to part with R. Parry who would not follow me upon the rocks."]

June 18th. I took a short walk from my lodgings near the old castle towards—[53]—the mountains and about a mile South-west upon high ground, I found in flower and seed a *Nasturtium* resembling very much that which we sow in gardens for salleting, only the stalk seemed more hoary and of an ash-color; from thence I went to the Lake called Llyn-dwythwch above the turbary, where I saw growing the 2nd *Subularia* [*Littorella juncea* Berg.] but of a rusty red color as I observed everywhere at this season; and the 1st [*Isoetes lacustris* L.] cast upon the shore; and *Subularia erecta juncifoliis acutis mollibus* [**Subularia aquatica* L.] 7 or 8 inches high in seed, and not finding any of them last year, in the several places we found them, makes me conclude that these which I now found are the first crop, and those last year were a second crop raised from the seed that ripened the spring, if so they are annuals that raise themselves two or three times in a summer; and here I found *Gladiolus lacustris* [**Lobelia Dortmanna* L. R.S. 287* says "In omnibus Cambriae montibus occurrit," but does not particularise] in a better state than we found it last year—[54]—*Note* that the Subularia last mentioned is in a decaying state and the seed mostly droped or ready to drop; it hath a long root like a radish, and when the seed is ripe the root dieth, but another riseth and joins to the old decayed one, I fancy 'tis something like the Tulip, the old dies, but a new one is produced.

June 19th. I took another walk to Llyn-dwythwch, and found very near it in two places amongst the heath a very elegant Bryum with a head like an urn; and in this lake a *Potamogeton* and also another small round-leaved one that I think I have not met with before; and in the rill that runneth out of the Lake I met with another *Potamogeton* with a long narrow leaf about twenty yards from the lake; and in the lake sticking to the stones in the bottom a very elegant brown *Conferva nodosa*, very slippery and tender; it grew in round balls of the size of an orange, I was a little surprized when first I saw it, because—[55]—I never met any before that grew into such a figure.

June 21st. Wm. Jones, Landlord, and I went from our lodgings directly for Wyddfa or Snowdon, searching all the upper rocks of Clogwyn-y-Garnedd, and went down as far as conveniently we could, where we found before we came to Wyddfa several plants more of *Cirsium* (soft thistle) and *polyanthemum*, R.S. [evidently *Saussurea alpina* DC., though there appears to have been here an error in transcription] and after we passed Wyddfa upon the upper part of Clogwyn-y-Garnedd, where there are a great many loose stones, and very few large ones, and several grassy places, we met with great plenty of the *Alsine myosotis facie, Lychnis alpina flore amplo niveo repens* D. Lhwyd Syn. 349. 5. [*Cerastium arcticum* Lange] the place lieth eastward from the Wyddfa, and here we searched very carefully, and all the ground between Wyddfa and Clogwyn-y-Garnedd, and found *Salix alpina alni rotundo folio repens* R.S. [*Salix herbacea* L]. We went from hence searching all the rocks as we went down—[56]—to Llyn-llydaw for the new moss I found last year which Dr Dillenius called *Lichenoides coriaceum pullum* &c. which we found again upon the great stones lying near the upper part of the said Lake towards Llyn-cwm-y-ffynnon-las, and also another like it set with small prickles, and in this lake I found a strange plant resembling in leaf the first *Stellaria* in the Syn. which was first observed by Wm. Jones, and out of the wings of the leaves it has a double seed vessel like a *Veronica*; and about these Lakes I found the coffee-colored *Lichenastrum* in a better state than I met with it before, and several other curious mosses. From hence we went to the lower part of Clogwyn-y-Garnedd, and ascended as high as we could where it was practicable and found almost everywhere a third sort of grass upon grass; took several plants of *Virga aurea montana folio angusto subincano flosculis conglobatis*—[57]—R. Syn. [*Solidago Virgaurea* L., var. *cambrica* (Huds.) Koch] and in several places more of *Polyanthemum* Syn. 193. 2. [obviously Syn. 193. 3, *Saussurea alpina* DC., is intended] found almost everywhere a sprinkling of *Saxifraga foliis oblongis rotundis dentatis floribus compactis* [*Saxifraga nivalis* L.]; but the greatest plenty (and that not a great many) towards the end of the said rocks, and next to Crib-y-Distill; but the plant that I found in the middle of the said rocks with a leaf like a *Ptarmica* and a spike like a Bistort pleased me best and here I found *Nummularia major lutea*, Syn. [This is usually regarded as *Lysimachia Nummularia* L., but the locality renders it most improbable in the present instance] smaller and more sharp-pointed than the common; we took a few plants of the *Lonchitis aspera major* [*Polystichum Lonchitis* Roth.].

June 26th. Mr Owen, W. Jones and I prevented by the weather from going to Llyn-cwm-y-ffynnonfelen, in the attempt found in fruit *Salix alpina Alnifolio*, [*S. herbacea* L.]; searched Bwlch-coch for Bistorta [presumably *Polygonum viviparum* L., f. *alpinum* Moss, for specimens of which Dillenius had made special request when writing on 31st May—vide *Letters*, f. 10], but in vain. [B. MS. gives an extended version of this paragraph].

June 28th. W.J. and I went from our lodgings the pastureway to Llyn-cwm-y-ffynnonfelen and Llyn-cwm-y-ffynnon-frêch and searched the rocks round both these—[58]—lakes for *Paronichiae similis sed major perennis alpina repens*, Syn. 292. 2, [*Draba incana* B. Huds. Fl. Angl., ed. 2], but without success. I observed on the last mentioned Lake *Subularia vulgaris erecta folio rigidissimo*, Syn. 306. 1 [*Isoetes lacustris* L.] and in Llyn-cwm-y-ffynnonfelen the same *Chara* that Dillenius and I found last year [*Nitella opaca* Agardh, cf. *Dill. Herb.*, p. 51] but now in small heads of an orange-colour, five or six of them together enclosed in the smallest branch of leaves on the tops of the plants; but could not see in this Lake one of Consl. Sherrards *Subularia* where was great plenty last year. I observed nothing upon the rocks, but what I saw before, tho' in a better state which induced me to take *Lonchitis aspera major* [*Polystichum Lonchitis* Roth.]. I had like to have omitted our finding upon the high rocks over the first mentioned Lake a Lichen which I take to be the same Dr Dillenius and I found on Cheder rocks with holes sunk in most of its leaves, which is seen on the underside, like a dish with—[59]—the under part turned uppermost; the leaves of it are white and hairy underneath, and green on the upper, and broader, and not so long as the other great Lichens are. [B. MS. adds: "This W. Jones found upon the high rocks before the first lake when I was with him." Neither Llyn-cwm-y-fynnon-frêch nor Llyn-cwm-y-fynnon-velen is marked on the six-inch O.S. map, nor is either referred to by Carr and Lister (*The Mountains of Snowdonia*. London, 1925); but J. Gay, who visited Snowdonia in the company of the English botanists, C. C. Babington and W. W. Newbould, in 1862 states (*Bull. Soc. Bot. France*, x., 391, 1863) that the first-named collected plants in the vicinity of Phynon-vrêch and Phynon-velan, both of which lakes were situated in Cwm Glas, the former being reached first on the way up from Llanberis Pass, the latter being somewhat higher (2200-2300 ft. altitude) on the east side of Snowdon and dominated by " des parois à pic qui aboutissent superieurement au Crib-y-Ddysgyl." This description seems to correspond with the positions of Llyn Glas and Llyn Bach respectively.]

July 1st. We went from our Lodgings at Cwm-brwynog in the parish of Llanberris near the old castle to Wyddfa and searched Clogwyn-y-Garnedd as far as we could go down, where we found the Lichen again that Dillenius and I found upon Cheder rocks with a hollowness sunk in the leaves and a black spot in the bottom; and also more plants of *Alsine myosotis facie* &c. [*Cerastium arcticum* Lange] that is cut in the Syn. [Tab. xv., Fig. 2] *Salix pumila folio rotundo* [*S. herbacea* L.]; a *Gramen*; one plant in flower of *Saxifraga foliis oblongis rotundis dentatis floribus oblongis*, R.S. [*Saxifraga nivalis* L.] and in ripe seed *Saxifraga alpina ericoides flore coeruleo*, R.S. 353.1 [*Saxifraga oppositifolia* L.] and amongst the moss on the top of Wyddfa and other places thereabouts *Lichenoides rigidum Eringii fol*: R.S. 77. 90 [*Cetraria islandica* (L.)]—[60].

July 3rd. I went to Trigfylchau in search for *Bulbosa alpina juncifolia, pericarpio unico erecto in summo cauliculo dodrantali* Syn. 374. [*Lloydia serotina* Reichb.] but in vain; I met with *Plantago* [presumably *Plantago maritima* L.] *Salix*, *Cirsium*, *Virga aurea* [*Solidago Virgaurea* L.] and a *Turritis*, *Anacampseros radice rosam spirante major*, Syn. 269. 2. [*Sedum roseum* Scop.] and another with a serrated leaf; (Orpine); and another with oblong leaves, (Do.).

July 4th. We went to Llyn-y-cwn, where we took ripe seeds of *Gnaphalium*, two small seedling plants upon the rocks between the Lake and Trigfylchau; and between the two mountains *Hieracium*, and in several places on the rocks between the two mountains, especially west of the Lake, Salix; and another smaller Salix with a sharp pointed leaf.

July 5th. Again to Llyn-y-cwn and ascended the green and pasture way up the Glyder in search, but in vain, for *Lycopodium elatius juniperinum* [*L. annotinum* L.]—[61]—being as I thought the very place where I found it last year in plenty, but found on most of the low rocks that surround the lake between the two mountains many seedling plants of *Hieracium alpinum villosum flore magno singulari caule nudo* [*H. holosericeum* Backh.]; but most plenty upon the great and highest rock that standeth west of, but very near the Lake; I found none in flower, but two plants with ripe seeds. [This passage supplies the locality of the specimen referred to in *Dill. Herb.*, p. 62.]

In our return we searched the shore of the Lake by the great bridge of Llanberris, and found in a neck of the Lake that runneth into the Meadow, the plant, that I found in a river, in fruit, which, in viewing with the magnifying glass, appears like an acorn out of a shell set upon a spike; Dillenius called it [here a gap in the MS.].

July 7th. We went to Clogwyn-du-yn-yr-Arddu and took, in ripe seed *Nasturtium petraeum* [*Arabis petraea* Lam.] and likewise *Alsine Pusilla flore pulchro, folio tenuissimo*, Syn. 350. 4. [*Arenaria verna* L.] and also *Lychnis alpina minima* [*Silene acaulis* Jacq.];—[62]—and on the dry large stones about the Lake, *Lichenoides coriaceum pullum Delicata pro radice* and two others of a different texture, one of them finely adorned with heads, both of them have the appearance of roots as the first.

July 10th. We went to Trigfylchau with Wm. Griffith (who was guide to Consul Sherrard and Dr Richardson), in search for *Bulbosa alpina* [*Lloydia serotina* Reichb.], but in vain; nor did I observe anything new. [The B. MS. version of this passage reads: "July 10th. We went to Trigfylchau with Mr Griffith who was guide to Consol and Mr Sherard and Dr Richardson, to the place in search for *Bulbosa*, but they did not find it, tho' Dr Richardson says they were upon the very rock, being very dark and wet weather; Griffith said that he carried us to every place where the said gentlemen went after plants that day and in particular to the place where he says they searched for *Bulbosa*, but our search this day was as fruitless as theirs." It has been suggested (by J. Britten, *Journ. Bot.*, lxi., 227, 1923), largely on the strength of this passage, that Richardson and the Sherards had visited the Glyder in search of *Lloydia* earlier in 1727. But it seems hardly likely that Brewer, who was in the district the whole of the summer, should not have joined forces with Richardson in making such an expedition. It will be recalled that Richardson had been shown *Lloydia* by its original discoverer, Edward Lhwyd, and he appears to have been, at the time of which we are speaking, a great friend of Brewer's.]

July 12th. Prevented by the weather from going to Bwlchcôch &c. in search for *Bistorta*, we searched all that which riseth above Llanberris, on the top of the Mountain that leadeth the horseway to Wyddfa-lechog, and found several curious mosses, that I had not met with before, upon great stones that commonly stood at some distance from others; first a very hard, short one, in tubercula which is set round with [gap] like *Muscus arboreus cum orbiculis*, the leaves very finely cut into branches of a brown color; and a creeping—[63]—soft one easy to take from the stone, very finely divided into branches of a mouse color; and a black one with a head of a pyramidal shape of a red color striped with black rising from the top of the leaves; this Moss I observed in most places about Llanberris; and also three sorts of Lichenoides with roots as mentioned the 7th instant, and in our way home in the river that runs from Clogwyn-du'r-arddu we found two or three heads of the Grass-moss that is common in the mountain rivers like a *Lichenastrum* and branched and hairy; I believe we did not take less than a horse-load at different times, but never found more than these three heads, which seemed to be set all three in a different manner.

July 13th. Mr Jones and I took a walk towards the great lake beyond the old castle, and in the woods called Coed-y-ty-dû, which signifies black house wood, upon the bogs I met with *Ros Solis folio oblongo* [**Drosera longifolia* L.] which is the only place I—[64]—found it, since I left Cadair Idris, and on the rocks here I found again the new Moss that Dr Dillenius named *Lichenoides fuliginosum patellis exiguis planis.*

July 14th. We set out for Bwlch-côch with a design to search for *Bistorta min alpina foliis imis subrotundis minutissime serratis* D. Lhwyd. R.S. 147. 3. [*Polygonum viviparum* L., forma *alpinum* Moss] but the weather proving unfavourable we returned by the river, that runneth from Arddu between the two ridges of mountains and empties itself into the great lake by the old castle, where we found a little beyond the bridge that leadeth to my Landlord's dairy-house called Helfa-fawr the *Fontinalis* in head that Dr Dillenius and I took last year but not in head; he took it to be a new species different from the 2nd Syn. Also a kind of Saxifrage that groweth about walls; we took out also a great deal of the branched moss with Trichomanes leaves like the small *Lichenastrum* of a greyish color—[65]—and hairy to search at our leisure for its heads, and on the rocks below our lodgings, and under the well that the family make use of I observed in appearance two sorts of Birch, with very broad leaves deeply indented, and one of them more rough and hairy than the elm tree; at first sight I took them for Tilia, perhaps this variety may proceed from their being young and luxuriant.

July 16th. We made another unsuccessful attempt (owing to bad weather) to find Bistorta Syn. No. 3. but at the side of a little rill above the house where we lodged, and near the place where the family wash their milk vessels, I found *Cassida* if not the 2nd Syn. 'tis a new one; it has a white flower the under lip spotted with purple [this is almost certainly the hybrid **Scutellaria galericulata* × *minor* = *S. Nicholsoni* Taubert referred to in *Dill. Herb.*, p. 79]; and in standing water in David Griffith's Turbary I found a *Conferva* smaller and longer than that which I found in Llyn-dwythwch.

July 17th. We went up the mountains a little above Clogwyn-du'r-Arddu,—[66]—and down between Llyn-cwm-y-ffynnon-frech and Llyn-cwm-y-ffynnon-felin searching all the rocks on our right hand in our way to Bwlch-côch, where 'tis said *Bistorta alpina* grows, and found the rocks all the way up very productive of almost all the Snowdon plants, and found two plants of *Saxifraga foliis oblongis rotundis* &c. [*S. nivalis* L.] in a more beautiful state than ever I saw it before; and in several places the new Lichen; and in a cave towards the upper part a Bryum in head with a pellucid dutch-box-tree leaf and short pedicles, and also two sort of small *Salix* seedling plants with the underpart woolly, shaped and serrated like betony but larger; I could not find any of it in flower.

July 18th. We went up Wyddfa the weather dark and foggy, we could not go down so far as we intended, we only found *Alsine myosotis facie* Syn. No. 5. [*Cerastium arcticum* Lange] in ripe seed, and a few Mosses in head, and am in hopes one of them is the new Bryum Dr Dillenius was so pleased with.—[67].

July 19th. We set out with an intent to go to Clogwyn-y-Garnedd in search of *Filicula alpina pedicularis rubrae folio subtus villosa* [*Woodsia hyperborea* R. Br.], but the weather proving foggy we returned to the rocks called Cwm-dwrw-enyth which almost surrounded four lakes, one of them very shallow; from these lakes you have a view of five more that are very near to them; I found the rocks dry and barren tho' many rills run between them, in which are many mosses; some of them I took for examination, not being certain whether they are new or old. By the sides of the middle lake, upon the stones under water I found a pretty brown *Lichenoides* very prettily divided into branches, not so soft as those compared to jelly, and I found the same in great plenty in the rills near the Lake, that came down from the high rocks, and in the same place a small *Chamaenerion* [*Epilobium alsinefolium* Vill. "From ye Rill near ye Lake Llyn Coch," *Dill. Herb.*, p. 149] (*Epilobium alp?*) [? transcriber's gloss] which seldom produced more than one seed-vessel thick set with leaves; the—[68]—middle Lake is called Llyn-côch, i.e. Red Lake, where I found a white *Ranunculus* with leaves shorter and smaller than *aquatilis* Syn. 249. 3. otherwise the same. The Great Lake that is at a distance from the four, and below them, and near East to the farm called Cwm-brwynog is called Llyn-ffynnon-y-gwas. *Note* that I found in the said dry rocks (page 67) a *Vitis Idaea* with a serrated and crisped leaf shaped like the *Buxi folio*, and in the rill, upon the stones and rocks a creeping *Coralloides* pinnated like a fern; and at our first coming upon the rocks from Arddu we observed a *Hypnum* in head.

July 21st. Took a walk down to the meadows below the old castle, and in the great and lowermost lake towards Carnarvon I met with the undermentioned plants *Ranunculus flammeus angustifolius* [**Ranunculus Flammula* L.]; *Nymphaea flore albo* [**Nymphaea alba* L.]; Burr flax [B. MS. has "flag"] with a small long narrow leaf swimming upon the water; and a Plant with—[69]—a white three-leaved flower and in fruit, with leaves shaped like a narrow purslane leaf on the top, the under leaves like *Subularia* in shape, tho' not tubulous or jointed as the *Subularia* is [**Elisma natans* Buch., cf. Clarke, *Journ. Bot.*, xxxiv., p. 83, 1896]; and here I observed the Irish *Subularia*

[**Subularia aquatica* L., cf. R. Syn., 307, 4, " in lacu Hibernico Lough Neagh."] and *Subularia repens* [*Littorella juncea* Berg.]; all these plants were near together at the head of the Lake.

July 22nd. We went down towards the old castle, and crossed the river at the bridge, and about the middle part of the river between the two lakes, under the side, sticking to *Subularia repens*, I found *Spongia fluviatilis ramosa viridis fragilis* Syn. 30. 5. [*Spongilla lacustris* L.] which looked in the water like *Lycopodium*. I could not take it out whole being very brittle and difficult to come at, so that I could not get a fair specimen of it.

July 24th. Left Llanberris and came to Bangor to Mrs Smith's observed nothing remarkable by the way, the weather being very wet, except—[70]—near a farm-house call'd Brithdir Mawr about two miles from Bangor and in that parish I found a very elegant *Cannabis spuria*, with a very large white flower with purple spots in the under jaw [According to Hudson *Cannabis spuria* Ger. = *Galeopsis Tetrahit* L., but Brewer's observation refers to **G. dubia* Leers., an unlocalised specimen of which is in the Dillenian Herbarium; I am informed by Miss Vachell, F.L.S., that she has collected the plant in this locality]; and in the turbary near the place where the Occycoccus [sic] grows and about a quarter of a mile from the smith's shop in the parish of Llanddenioen a third sort of *Pentaphylloides palustre rubrum* [*Potentilla palustris* Scop.]; it seemeth to be more hairy and silver-colored than the two sorts I met with before.

July 26th. Mr Green brought from Anglesea the under-mentioned plants; from the grassy places among the sand near Newborough, *Vulneraria supina flore coccineo* Syn. 325, 2 [*Anthyllis* *Vulneraria* L., var. *coccinea* L.]; from the dry rocks about the same place *Lichenoides cartilagineum luteovirens scutellis planis folio aquantibus* new; from the sandy shore facing the main sea between Abermeney ferry and Llanddwyn, where the decayed—[71]—church standeth *Leucoium marinum majus* Park. Syn. 291. [*Mathiola sinuata* R. Br.] and a *Sedum minus luteum ramulis reflexis* Syn. No. 2, very hot upon the tongue [**Sedum reflexum* L.].

July 29th. Thos. Price brought me *Aster maritimus tripolium dictus* [*Aster Tripolium* L.] which is call'd in Welch Scyrfy gwrw, i.e., the male scurvy, which is very commonly used here, with very good success, by them that have the Scurvy or other such breaking out.

Mr Green sent me from Pentir six small *Orchis* which I take to be *Orchis palmata minor flore luteo-viridi* R. Syn. 381, 22 [*Habenaria viridis* R. Br.] but as they have not roots I cannot be sure; and *Fungus seminifer externe et interne hirsutus* which I think differs from the 2nd *seminifer* in Syn. [*Cyathus striatus* Hoffm.] also two small plants of *Chamaenerion*.

August 5th. Received from the Revd. Mr Green the under-mentioned plants taken from the same places in Anglesea as we did the last year;

but now in a better—[72]—state, tho' not in a good one, being too far gone, especially the Helianthemums; three or four sorts of *Limoniums*; the small annual *Helianthemum* [*_Helianthemum Breweri_ Planch.] from Holyhead mountain which is almost covered with it, and a good quantity of the seed of it; it grows in great plenty on the south end of the ridge of the mountain whereon stand the ruins of an old chappel. N.B. It is that part of the mountain that lies remotest from the town of Holyhead to the South-west; in this part of the mountain is a large standing pool of water seldom or never dry, and if you walk upon the highest part of the mountain west of this pool, 'till you come to the south end of it, you cannot miss the plant; the mountain that it grows upon is called Llech-ddu, which lieth between the sea and lake called Llyn-Mawr; and the greatest plenty groweth upon the highest part, where is a heap of stones partly walled in—[73]—form of a circle. He also brought at the same time two sorts of Gentianellae. [This note was copied from the B. MS. and published by G. C. Druce in *Journ. Bot.*, xl., 1902, p. 231. According to C. B. Clarke (*Journ. Bot.*, xxx., 120, 1892) Hudson's reference (*Flora Anglica*, ed. 2, p. 282) was the first record of *H. Breweri* to be published. The earliest reference to this species is in a letter from Dillenius to Brewer (31st May 1727) in which he says, "I desire him (*i.e.*, Mr Green) to look after the plant you sent from Holyhead for a small annual tetrapetaly. It is a *Cistus* and seems to be new "].

August 16th. Mr Green, Wm. Jones and I came to our old lodgings at Cwmbrwynog in the Parish of Llanberris.

August 17th. We walked up Wyddfa and took seeds of all the choicest plants that we found ripe, but met with no plants that I had not met with before except *Filix alpina pedicularis rubrae folio, subtus villosa* [*Woodsia hyperborea* R. Br., cf. *Dill. Herb.*, p. 46]; which was first observed by Mr Green on a high rough rock that standeth perpendicular and faceth the head of the lake called Llyn-cwm-y-ffynnon-las, 'tis about the middle of Clogwyn-y-Garnedd, and the said rock is as high as it is hardly possible for a man to climb up to; it grew very much exposed to view, and hardly any grew lower than ten feet, so that we were forced to take them down with a pole twenty feet long with a radicator at it's end.—[74]—*Note* that the *Filix* was past its beauty and mostly in a withered state. The place where this delicate Filix grew is in a pretty large nich, or a place that juts in within the other rocks and faced with a pretty plain place; and in one of the little pools that you see under you as you come down the east side of Wyddfa, on the top of the ridge that leads from Wyddfa to another rugged mountain eastward called Lliwydd, and on the top of Clogwyn-dû-talcen-y-Llyn I found a *Gramen*; and near the same place where the *Filix alpina* &c. grew I found *Chamaerubus saxatilis*, Syn. [*_Rubus saxatilis_ L.].

August 20th. I left Llanberris and went to the house at the head of Llyn-Ogwen called Tal-llyn-Ogwen; we went to Llyn-y-cwn and searched the rocks there for *Hieracium villosum alpinum* &c. [*H. holosericeum*

Backh.] in hopes of finding it in flower, but found it not in that state; from—[75]—thence we ascended Glyder to seek for *Dens leonis foliis angustioribus*, Syn. 171. 2. but in vain; we came down by Llyn-Bochlwyd which standeth above, south and triangular of Llyn Idwal and Llyn Ogwen in which lake we found great plenty of *Spongia ramosa fluviatilis*, Syn. 30. 5. [*Spongilla lacustris* L.].

August 21st. The weather stormy with snow &c. we returned to Bangor, and observed but little by the way unless in Nantffrancon meadow an *Equisetum* that I think differs from all that I had seen; an *Equisetum palustre minus polystachion* ? Syn. 131. 7. [possibly the barren specimen from this locality of *E. maximum* Lam. referred to in *Dill. Herb.*, p. 51; but Ray's plant seems to be synonymous with *E. palustre* L., var. *polystachyum* Weigel].

August 27th. I crossed the sea at Moel-y-don: in my way to Newborough I observed under a wall, a little before I came to Llanidan, where Mr Thos. Price [B. MS. has "Llwyd" instead of Price] lives and a candidate for Anglesea Coty great plenty of *Rubus Minor fructo coeruleo* [**R. caesius* L.]; and a little above the mill, a mile before we came to Newboroug,—[76]—called Melin-wen, i.e. White Mill, I found a water plant I take to be a *Chara*, and in the high way a little before I came to the mill in a watery place I found another which I take to be a new *Hydroceratophyllon*, and in the great lake at Newborough I found cast upon the shore *Potamogeton foliis pinnatis* [**Myriophyllum spicatum* L.] smaller than N. 17. R. Syn. it has no spikes, it is therefore difficult to determine what the plant is.

August 28th. I took the sea shore at the nearest place in view, and followed it pretty close 'till I came a little past Llanddwyn where I found upon the rocks facing the sea Tithymalus [*Euphorbia Paralias* L.] and in the sand near the shore in a good state that which Dr Dillenius and Mr Stonestreet thought to be new [*E. portlandica* L.; cf. *Dill. Herb.*, p. 97, "upon ye sea shore about Llanddwyn" and Ray Syn., 313, "Tithymalus maritimus minor, Portlandicus—found by Mr Stonestreet in the narrow neck of land which joins Portland to Devonshire 1711."], and also under the rocks *Rubus minor fructu coeruleo* [*R. caesius* L.]; and about a mile from Llanddwyn, in our way to Abermeney, near the shore, and also at some distance—[77]—further into the sand, I found great plenty of *Leucoium marinum majus* [*Mathiola sinuata* R. Br.] but all in the circumference of a quarter of a mile, and but one plant of them in flower, and that with good seed; at Abermeney I met with but two plants in flower and seed of *Eruca monensis* [*Brassica monensis* Huds.] which I took, and returned; in the circle, I took the seeds of *Vulneraria supina flore coccineo* [*Anthyllis vulneraria*, var. *coccinea* L.] *Aster luteus crithmi folio* [*Inula crithmoides* L.], *Cakile* [*Cakile maritima* Scop.], Sandwich Willow [*Salix repens* L.], *Tithymalus paralias*, Portland. I also found, where the *Leucoium* grows, *Polygonum marinum* [? *P. Raii* Bab.]; and in the sand marshes a

Gramen spicatum that Dr Dillenius observed last year, but he did not take it up with much creeping roots as I have now, that characteristic therefore was then unobserved.

September 1st. I went from Bangor and crossed the sea at Garth into my Lord Bulkeley's Park, where I found Hieracium, from thence to Beaumares;—[78]—then to Ffryars where Mr White lives, and where I found my good friend the Revd. Dr Foulkes [who was well known to the botanists of his day; he had formerly botanised in Anglesey with Edward Lhwyd and at least one plant discovered there by him was described and figured in the first edition of the Synopsis (*Letters*, 2)]; I took a boat near Penmon farm and went over to Priestholm or Puffin Island, but to no purpose, having searched all the rocks that were accessible and the pasture ground above them, and observed nothing to grow there (except in a hole of water in the rocks a brown *Conferva* that seems to differ from all those I met with before) that was worth notice; *Geranium pusillum betonicae folio nostras*, Syn. 356. 1. [*Erodium maritimum* L'Hér.] covered almost all the pasture ground; there was also plenty of Sea Beet, *Smyrnium* [*Smyrnium Olusatrum* L., cf. *R. Syn.*, 208, §1], Elder, and some *Chamaefilix marina angl*: [*Asplenium marinum* L.] (Lovage myrrhae odorem spirans) upon the rocks but not in plenty; in short nothing but what grew upon the rocks opposite to the Island under Penmon farm, where there is much greater plenty and variety of plants, and in a better state.—[79].

September 2nd. Dr Foulkes was so good as to accompany me to Penmon farm where we searched but in vain for the tetrapetalous plant with a Cymbelaria leaf that Dr Dillenius found there last year, and lost it soon after he found it; near the sea upon the highest ground above the rocks opposite to Priestholm Island I found a *Helianthemum* with a yellow flower, there were many of them in that state. I think I found on the stones in my Lord Bulkeley's Park the new Polytrichum that I found there last winter, now in head, and before with a calyptra or veil on.

September 4th. I went with Dr Foulkes to Newborough; we rode over all the sands and marshes from Llanddwyn to Abermeney, but found nothing but what I met with last year, except a *Pentaphyllum* or *Pentaphylloides* that seemeth to differ from any I met with before.—[80]

Sept. 5th. Dr Foulkes and I from Newborough crossed the sands to Llangadwaladr, there is a handsome building joining to the church erected by Sr. Arthur Owen which serves as a seat for all his family; from thence we went to Aberffraw, thence to Llangwyfan, the church standeth in the sea at high water; we followed the shore, which is steep and rocky, till we came within a mile of Llanfaelog, there we found it sandy, and searched for *Asparagus maritimus crassiore folio* [*A. officinalis* L.; B. MS. calls it asparagrass] said to grow here, but could not find it, but here we found, for a mile together, great plenty of *Gnaphalium marinum*, Syn. [*Diotis maritima* Cass.; doubtless the specimen referred to in *Dill. Herb.*, p. 65, came from here] which I took several specimens of in good condition and a quantity of good seed; here I found also good plenty of *Soldanella* [**Calystegia Soldanella*] with much good seed. [The next few lines (to "in the island") combine both B. and D. versions.] We left the shore and went to Llanfaelog where there is a public house, and from thence we went to a great lake four miles round in the Parish of Llanfihangel called Llyntraffoll. In this lake are many small rocky islands. We searched here thinking this to be the lake—[81]—where is said to grow *Lysimachia bifolia flore luteo globoso* [*Lysimachia thyrsiflora* L.], but afterwards was informed it was a little further. We soon came to it. It is called Llechylched not Nynnechyched as mentioned in the Synopsis there being no such place in the island, but the weather would not suffer us to search this place which is chiefly boggy, and appears to be very productive of several uncommon species of reeds and other plants and likely for Lysimachia. This lake lies under Llechylched church, 'tis about two miles from Presaddfed where Mr John Owen liveth. Between Llangadwaladr and Aberffraw we found a small *Conyza media* [**Pulicaria dysenterica* Gaertn.], in good riding like the Wiltshire downs; and in the great lake call'd Llyn-traffoll *Persicaria salicis folio perennis, Potamogeton angustifolium dictum* [**Polygonum amphibium* L.]; no doubt but in the Lake and the Islands there are plants to be found not yet observed.

Note.—*Gnaphalium maritimum* doth not grow anywhere about Abermeney or Llanddwyn (which is the old church three miles from Abermeney) whatever it did formerly [cf. Ray's statement, "We found it plentifully on the Sand near Abermeney-Ferry, in the Isle of Anglesea," *R. Syn.*, 180] *Leucoium* [*Mathiola sinuata* R. Br.]—[82]—groweth within a mile of Llanddwyn near the shore and about two miles from Abermeney; and this ought to be corrected in the next edition [of the Synopsis]. Memorandum: *Veronica spicata cambrobritannica, Buglae subhirsuto folio* [*Veronica hybrida* L.] was found by Dr Foulkes at Gloddaith, just above Sr. Roger Mostyn's house and sent me by his nephew, Sir Ed. Griffith of Conway, Merchant. [The transcriber adds in pencil, "I found the *Asparagus* &c. on a sandy bank near the sea A.D. 1778. 27 August, H. Davies." (His specimen is in the Welsh National Herbarium.) "I fear the *Gnaphalium marinum* is lost—I have sought in vain for it several successive years. H.D." However, Davies may not have looked in the right place. for Lightfoot in the course of his visit with Banks records, "Aug. 7th [1773] . . . *Athanasia maritima* [*i.e.*, *Diotis*] among the sands at Llanfaelog . . . but only a few plants and those not yet in flower. It flowers in Sept." (v. Riddelsdell: *Journ. Bot.*, xlii., 305, 1905). According to Griffith (*Flora*, p. 78) this species was re-discovered at Llanfaelog in 1894.]

Sept. 7th. Wm. Jones and I went to the seashore near Llyfni-river (by Carnarvon, Pont-y-saint, Pont-newydd, and Dinas where my Lady Wms. liveth), and by Dinas Dinlley and so all along the sea-side in search for *Solanum lignosum, s. Dulcamara marina* [*Solanum Dulcamara* L., var. *marinum* Bab.], but 'tis not there. We found *Echium marinum* [*Mertensia maritima* S. F. Gray; it was discovered here by Lhwyd, cf. *R. Syn.*, p. 228] upon the high stony shore between Dinas Dinlley and the river above mentioned which is the same place where Dr Dillenius and I found it last year. I took seeds and plants of it and planted some of them by Mr Jones at Silwen, near Bangor, and sent Dr Ffoulkes some of it to plant, and gave him seeds of all my sea plants. Before we came to that river and passed the *Echium* Island good seeds of the *Soldanella* were obtained; it being low water we returned thro' the marshes, and all along the sea-shore to Carnarvon, but met with nothing remarkable, except the small *Solanum* that I found last year near the Fryers by Beaumares [*i.e.*, *S. nigrum* L.; cf. *Dill Herb.*, p. 84].—[83]—I took seeds of it to try if it be a small new species.

Sept. 24th. Wm. Jones and I left Bangor and went to Llechylched to the great boggy place there called Cors-Llechylched, and here we searched for *Lysimachia* [*L. thyrsiflora* L.] in vain, but found two other yellow *Lysimachiae* in a wither'd state and had we searched this place in a more proper season 'tis probable I might have found the *Lysimachia* I went after; but the late rains raised the water so high, that we could not search the most proper and likely places for it, and the people cut everything they can come at to thatch their corn and hay with; we did what was possible for us to do in hopes of finding it, we walked for a mile together in water above our knees, and the earth shaking under us.

We went from thence to Holyhead and lodged at Weldon's house; but it were—[84]—named more properly if called Illdone, for I never was used worse anywhere. The next morning we went up on Holyhead mountain for the new *Helianthemum* [*H. Breweri* Planch.] that I found there last year, the place is very well described in the Journal for the 5th of August last the mountain it grows upon is called Llêch-ddû which lieth between the sea and the lake Llynnawr and the greatest plenty groweth upon the highest part where there is a heap of stones partly walled into the form of a circle; there is a higher ridge of mountain between the Town and this mountain; after we had gathered seed of the *Helianthemum* and took up several seedlings of it, we went to Porth-dafarch after the four sorts of *Limonium* that grew there, which we found in great plenty upon the top of the high rocks facing the sea on both sides of this Porth.—[85]—The smallest sort grew in the small, narrow necks or Isthmi that run into the sea, and the greatest plenty of the smallest sorts groweth upon the left-hand of the same Porth, towards Cappel St Ffraid; near Porth-da farch, in one of these little narrow necks, or Isthmi, I found upon the rocks *Muscus aureus tenuissimus*, Syn. [*Telochistes flavicans* Norm.]. In our return upon the dry rocks about Porthaethwy near Bangor I found *Lichenoides* of a mouse color between N.2. and 3. Syn. 65. [*i.e.*, *Alectoria* sp.] and also a brown *Lichenoides*. Near Porth-dafarch between the stones towards the top close to the sea, and at the side towards Holyhead mountain Wm.

Jones observed an Umbelliferous plant resembling a *Daucus*, but not being in seed I cannot fully determine what it is, the leaves are larger and narrower than I ever observed in any of that class before.

LIST OF ABBREVIATIONS.

Names of authors of modern (binominal) species are omitted. The titles and dates of older works are quoted from Ray's Synopsis, ed. 3, and do not necessarily refer to the respective first editions.

B. MS.—Transcript of Brewer's Diary in the hand of Sigismund Bacstrom; now in Dept. of Botany, British Museum (Natural History).

C.B.—Caspar Bauhin, author of the "Pinax et Prodromus Theatri Botanici," Basle, 1671.

Dill. Herb.—"The Dillenian Herbaria," an account of the Dillenian collections in the Herbaria of the University of Oxford, by G. Claridge Druce and S. H. Vines. Oxford, 1907.

D. MS.—Transcript of Brewer's Diary in the hand of Hugh Davies; now in Dept. of Botany, National Museum of Wales.

D.N.B.—"Dictionary of National Biography."

Flora.—"The Flora of Anglesey and Carnarvonshire," by John E. Griffith. Bangor, 1895.

Ger. and Ger. Em.—"The Herball," by J. Gerard. 1597; and the same revised and enlarged by Thomas Johnson, 1633.

Hist. Lugd.—Historia plantarum Lugdunensis [by Jacques d'Aléchamps; second French edition]. Leyden, 1653.

J.B.—Johann Bauhin, author of the "Historia Plantarum Universalis," Yverdun, 1650.

Letters.—Volume of manuscript letters to Samuel Brewer from J. J. Dillenius (ff. 2-31); from Thomas Knowlton (ff. 32-85); and from Peter Collinson (f. 86). In Department of Botany, British Museum (Natural History).

Merr; Merr. Pin.—"Pinax Rerum Naturalium Britannicarum," by Christopher Merrett. London, 1667.

Nichols.—"Nichols' Illustrations of the Literary History of the Eighteenth Century." Vol. I.; London, 1817.

Park.—John Parkinson, author of "Theatrum Botanicum," 1640, and "Paradisus Terrestris," 1629.

Pulteney.—"Historical and biological sketches of the progress of botany in England" (vol. ii.), by Richard Pulteney. London, 1790.

R.S.; R. Syn.—Synopsis methodica stirpium Britannicarum, by John Ray. Ed. 3 [by J. J. Dillenius]. London, 1724.

Rich. Corr.—Extracts from the literary and scientific correspondence of Richard Richardson, M.D., F.R.S., of Bierley, Yorks. Edited by Dawson Turner. Yarmouth, 1835.

Schw.—Schwenkfeld: Catalogus stirpium et fossilium Silesiae. Leipzig, 1600.

Sl., Sloane MSS.—Sloane Collection of manuscripts in the British Museum, Bloomsbury.

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ETC.,

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(CONVENIENTLY ABBREVIATED REP. B.E.C.)

BY THE

EDITOR AND DISTRIBUTOR,
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BRIT. MUS. (N.H.)

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(N.H.)
2 SEP 1931
BOTANY.

REPORT OF THE DISTRIBUTOR FOR 1930.

The plants contributed to the 1930 distribution were below the average in point of numbers, and, also, in point of interest. Too many common plants, of no particular merit, were sent for distribution. The falling-off of interest in all the large and intricate groups was remarkable, and a matter for regret. *Rubus* was represented by one gathering. Here, it is perhaps reasonable to ask whether the diverse views of experts as to specific identity and questions of nomenclature are responsible for the lack of interest in the brambles. Few gatherings of *Rosa* and *Hieracium* were contributed, a great contrast to what obtained a few years ago.

The following pages will show the little interest manifested by collectors in *Salix*, *Carex*, and other critical genera.

As so many members were content to contribute plants of general distribution, it is feared that those members who sent the largest and most interesting contributions, received but inadequate returns for their efforts on behalf of the Club.

The Distributor desires to thank all those members who contributed notes, and is especially indebted to Lt.-Col. A. H. Wolley-Dod, Rev. H. J. Riddelsdell, Dr E. Drabble, and Messrs W. O. Howarth, A. Bruce Jackson, J. E. Little, W. H. Pearsall, A. E. Wade, and Mrs Gregory, for valuable criticisms.

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	No. of Gatherings.	No. of Sheets.
S. F. Beattie	20	227
G. J. V. Bemrose	3	33
C. E. Britton	17	221
G. C. Brown	7	98
R. J. Burdon	10	145
R. Bulley	12	96
Cardiff, Nat. Mus. Wales	8	97
G. C. Druce	48	627
H. Foster	9	94
J. Fraser	5	101
L. B. Hall	1	24
P. M. Hall	2	18
I. M. Hayward	1	12
I. Helsby	4	37
J. E. Little	21	188
J. W. Long	7	80
Bro. Louis-Arsène	18	421
J. E. Lousley	24	230
H. J. Riddelsdell	9	78
F. Rilstone	5	51
I. M. Roper	5	73
W. A. Sledge	5	77
R. L. Smith	7	129
H. B. Willoughby Smith	1	26
F. A. Sowter	5	58
C. Waterfall	6	77
J. W. White	11	143
A. Wilson	3	70
		3621

Ranunculus acris L. Horley and other places, N. Oxon, June 1930. With very small flowers (only 50 to 65 per cent. of usual diameter), petals often notched or scalloped, stamens much reduced, sometimes hardly showing beyond the head of styles; plant slender. Scattered among normal plants and fairly frequent in occurrence.—H. J. RIDDELSDELL. "Probably var. *minutiflorus* Dr. See *Rep. B.E.C.*, 469, 1916, and 24, 1923."—BRITTON.

Ranunculus ophioglossifolius Vill. Near Cheltenham, Gloster, August 1930.—G. C. DRUCE.

Ranunculus parviflorus L. (1) Berry Head, S. Devon, June 2, 1930; coll. E. D. MORGAN, comm. H. FOSTER. (2) Gotham, Notts, June 5, 1930.—R. BULLEY.

Ranunculus triphyllus Hiern. Pond on the Moat Farm, Ubley, North Somerset, June 3, 1930. Agrees well with gatherings approved by Hiern. The carpels are not bristly.—JAS. W. WHITE. "Hiern's *triphyllus*, judging by his herbarium examples—all of which I examined—was merely a form of *R. heterophyllus*, and to avoid confusion with Wallroth's similar name it has been thought advisable to drop both and use var. *trifidus* Pears. These plants quite justify their label and are well displayed."—PEARSALL.

Ranunculus floribundus Bab. Pond near Yate Court, West Gloucester, June 19, 1930. Gathered rather late, in shallow water after weeks of drought, when few submersed leaves survived. As a Babingtonian species this is unsatisfactory. Messrs Groves and Pearsall both regard it as linking *peltatus* with *heterophyllus* and, as a rule, much nearer the former.—JAS. W. WHITE. "Fine examples of this and splendidly mounted, as we expect from Mr White. (It is a fact worth recording, that all the sheets of *Batrachium* and *Potamogeton* sent in this year to both clubs are far more carefully prepared than is commonly the case.)" —PEARSALL.

Ranunculus tripartitus DC. Knighton Heath, S. Devon, May 7, 1930.—E. D. MORGAN. "Yes, from a well-known station. These slender and delicate examples are most carefully mounted and display the plants to the greatest advantage."—PEARSALL.

Papaver Rhoeas L. [B.39.] Wheat-field near Greenstreet Green, Orpington, W. Kent, July 12, 1930.—J. E. LOUSLEY. "See *Rep. B.E.C.*, 274-7, 1918, for list of varieties of *P. Rhoeas*. According to the clavis there given, this plant would come under var. *caudatifolium* Fedde, sub-var. *subpinnatifido-caudatum* Fedde."—BRITTON.

Papaver Lecoqii Lam. Dry Sandford, Berks, July 1930.—G. C. DRUCE.

Papaver hybridum L. Splott, Cardiff, Glamorgan, June 18, 1930. This species (growing in company with *Roemeria*) was rather abundant this year. Curiously enough, I never once saw this poppy with a fully expanded flower. The petals must be exceedingly fugacious even for *Papaver*.—R. L. Smith.

Fumaria capreolata L., var. *Babingtonii* Pugsley. [2461.] Hedge-bank, Fingringhoe, N. Essex, June 5, 1930. Flowers pale pink, tips deep claret colour. Plant rampant.—G. C. Brown.

Fumaria micrantha Lag. Chalk near Goring, Oxon, June 29, 1930.—H. J. Riddelsdell.

Cardamine bulbifera Crantz. Wood near Croxley Green, Herts, May 22, 1929.—I. Helsby.

Erophila verna E. Meyer (aggr.). [841b.] Wymondley Road, Hitchin, Herts, April 18, 1930.—J. E. Little. "I make this come under *Boerhaavii* rather than *verna* E. Meyer. Ovules 24-40, and therefore it would be var. *decipiens*. I think, perhaps sub-var. *linearifolia*. Of course the fruit is narrow for the β section, but not beyond that of *decipiens*."—Drabble.

Sisymbrium pannonicum Jacq. [B.22.] Waste ground near Thames, Ham, Surrey, July 5, 1930. An alien plant becoming quite plentiful round London.—J. E. Lousley. "The specific name, *altissimum* L., is nowadays used in place of *pannonicum*."—Ed.

Sisymbrium Thalianum (L.) Gay. Near Earl Shilton, Leicester, May 1930.—F. A. Sowter.

Erysimum cheiranthoides L. Netherfield, Notts, August 9, 1930.—R. Bulley.

Bursa pastoris Weber, form or var. Shavington Avenue, Chester, June 1930.—C. Waterfall. "I should name this *Capsella B.-p.* (L.) *laevigata* E. At."—Britton.

Teesdalia nudicaulis Br. (1) Near Earl Shilton, Leicester, May 1930.—F. A. Sowter. (2) Sandy waste ground near Gainsborough, N. Lincs, June 1930.—H. B. Willoughby Smith.

Helianthemum polifolium Mill. Berry Head, Devon, June 2, 1930; coll. E. D. Morgan, comm. H. Foster.

Viola lactea Sm. Preston-on-Teign, Devon, June 4, 1930; coll. E. D. Morgan, comm. H. Foster. "Right, I believe, but rather scanty material."—Gregory.

Viola lactea × *Riviniana* = × *Curnowii* Dr. [528.] Chailey Common, E. Sussex, May 17, 1930. Growing very abundantly with both parents. *V. canina* L. also occurs, but I have been careful to select in the fresh state only plants which contained no trace of *canina*. This cross frequently gives rise to plants which when dried are very like *canina* superficially. The cordate or sub-cordate leaf bases, however, as well as the more inflated spurs and the fringing of the stipules, are good guides to the true parentage of the plants. The flowers when fresh are very pale blue, only slightly more coloured than those of *V. lactea*.—P. M. HALL. "Correctly named, I have no doubt."—GREGORY.

Viola odorata L., var. *subcarnea* (Jord.). [431.] Tidbury Ring near Bullington, N. Hants, April 5, 1930. This var. is widely distributed on the chalk in Hampshire, but generally occurs sparingly among the type and var. *dumetorum* (Jord.). Here, however, it was the dominant form, and the forma, *imberbis* (Leight.), was entirely absent, which is also unusual. The forma *imberbis* may occur in any of the colour varieties. The colour varieties, as well as the *imberbis* character, will, I believe, prove to be genetically constant.—P. M. HALL. "The direction of leaf hairs in this violet is not uniform, and I have for a long time considered it a hybrid, *hirta* × *odorata*, very near *odorata*; not a variety." —GREGORY. "In a Surrey locality known to me, a form that I identify as *V. subcarnea* Jord., is to be met with year after year, and plants transplanted to my garden flower maintain their characters each season."—BRITTON.

Viola contempta Jord., var. *patula* Drabble. [918.] Beggarly Shot, Purwell Field, Hitchin, Herts, October 4 and 11, 1930.—J. E. LITTLE. "All these are *contempta* Jord., and most of them are var. *patula*. Typically, however, var. *patula* has several widely divaricate or even more or less prostrate branches from the base. I have given my determinations on each label."—DRABBLE.

Viola agrestis Jord. [929.] Near Highover Farm, Hitchin, Herts, October 10, 1930.—J. E. LITTLE. "Yes, the late autumnal state of *agrestis*, which is usually smaller-leaved than the spring and summer states."—DRABBLE.

Viola agrestis Jord. [900.] Ash Brook, St Ippolyts, Hitchin, July 4, 1930.—J. E. LITTLE. "Yes, the summer state of *agrestis*."—DRABBLE.

Viola agrestis Jord. [895.] Cornfield, near Nine Springs, St Ippolyts, Herts, September 2, 1930.—J. E. LITTLE. "Yes, *agrestis*."—DRABBLE.

Viola ——. [919.] Beggarly Shot, Purwell Field, Hitchin, Herts, October 4, 1930.—J. E. LITTLE. "*V. agrestis* Jord., the autumnal state."—DRABBLE.

Viola ——. [921.] Beggarly Shot, Purwell Field, Hitchin, October 6, 1930.—J. E. LITTLE. "These are *V. latifolia* Drabble, but not very 'typical.' The leaves are usually broader and the flowers paler, but I think there can be no doubt about the identification."—DRABBLE.

Viola Deseglisei Jord. East Molesey, Surrey, June 1, 1930.—J. FRASER. "A mixed gathering. Some are *Deseglisei*, and I have confirmed these on the labels. Of the rest, some are probably small and 'untypical' *V. contempta* Jord., and others are indeterminate and probably hybrids."—DRABBLE.

Viola Deseglisei Jord. [860.] L.N.E. Railway, Wymondley Road, Hitchin, Herts, June 1, 1930.—J. E. LITTLE. "Early-flowering plants, but not *Deseglisei*, I think. The habit suggests *segetalis*, and so I should call these if *segetalis* occurs in the neighbourhood."—DRABBLE.

Viola Deseglisei Jord. [866.] 100 acre field, Great Wymondley, Herts, June 7, 1930.—J. E. LITTLE. "Yes."—DRABBLE.

Viola Deseglisei Jord. [856.] Rowney Warren, Beds, May 26, 1930. —J. E. LITTLE. "All these are rather young and without basal branching, but I think they are *Deseglisei*. In this state it is impossible to be sure that there are no young plants of *segetàlis* and its forma *obtusifolia* present."—DRABBLE.

Viola arvatica Jord. [901.] Great Wymondley, Herts, September 6, 1930.—J. E. LITTLE. "Yes, some of the plants are unusually large."—DRABBLE.

Viola derelicta Jord. [858.] Wilbury Hill, Herts, May, June, August, September 1930.—J. E. LITTLE. "Yes, some have the larger flowers found in plants from N. Scotland."—DRABBLE.

Viola segetalis Jord. Det. DRABBLE. Weed in Botanic Garden, Oxford, June 1930.—G. C. DRUCE.

Cerastium viscosum L., var. *macropetalum* (Dr.). [852.] Burnham Green, Herts, May 10, 1930.—J. E. LITTLE. "Yes."—DRABBLE.

Stellaria aquatica Scop. By Trent, Kings Mills, Derbyshire, August 22, 1930.—R. BULLEY.

Arenaria tenuifolia L. Wilbury Hill, Herts, June 3, 1930.—J. E. LITTLE.

Hypericum hircinum L. Churchyard, Clifton Hill, Bristol, August, September 1930.—J. W. WHITE.

Hypericum elatum Ait. Cultivated in the garden of Bristol University, August 20, 1930. Alien. An ornamental shrubbery plant which has a place in our descriptive books and catalogues. These fruiting specimens show the persistent sepals that mark the species. In *H. hircinum* they are deciduous.—J. W. WHITE.

Malva pusilla Sm. Roadside, Ryde, Isle of Wight, August 1929.—J. W. LONG. "Excellent examples showing the characteristic features of this species."—BRITTON.

Malva ——. Riverside, Newport, Isle of Wight, September 1930.—J. W. LONG. "Closely related to *Malva parviflora* L., and apparently the var. *microcarpa* (Pers.) Fiori et Paoletti, which Thellung terms a rather weak var. with calyx less accrescent at maturity and with smaller fruit."—BRITTON.

Malva parviflora L. Waste ground, Newport, Isle of Wight, September 1929.—J. W. LONG. "Well-marked by the accrescent calyx and wrinkled carpels. In continental specimens the fruiting calyx often becomes purplish."—BRITTON.

Linum catharticum L. [3342.] Banstead Downs, Surrey. A very much-branched form with a multitude of flowering branches, suggesting at first sight a condition of more than annual duration. It is possibly a biennial form or an "over-wintering" annual. Rouy (*Fl. Fr.*, iv., 56) has a var. *segetale* Adam, found in stubble fields on calcareous soil in the Vosges, which, by the description, must resemble the plant distributed.—C. E. BRITTON. "A well-grown state of ordinary *catharticum*. Plants transferred to my garden from Freshwater Downs produced a similar growth."—DRABBLE.

Geranium rotundifolium L. By railway bank, near Goring, Oxon, June 24, 1930.—H. J. RIDDELSDELL.

Geranium purpureum Vill., var. *Forsteri* Wilmott. [B.25.] Shingle, Clymping, West Sussex, June 6, 1930. An interesting plant which does not quite agree with the description of *Forsteri* in that it is erect. However, the other characters and the extremely small petals seem to indicate this variety. The size of the plants varied slightly according to exposure on the shingle, but they were all small.—Leg. J. E. LOUSLEY. "The glandular sepals, and the smooth carpels, deeply wrinkled throughout, seem to show that this is *G. purpureum* Vill., var. *Forsteri* Wilmott (=*G. purpureum* Forster)."—DRABBLE. "The only difference between *G. purpureum* Vill. and var. *Forsteri* Wilmott, is that the latter is prostrate. Mr Lousley's specimen therefore fails in its only distinguishing feature."—WOLLEY-DOD.

Impatiens parviflora DC. (1) Clifton Grove, Nottingham, August 30, 1930.—R. BULLEY. (2) Littleworth Common, Surrey, September 1, 1929 [3752].—C. E. BRITTON.

Ulex Gallii Planch. Ventongimps, W. Cornwall. Pods, April 1929; flowers, August 1929.—F. Rilstone.

Medicago Falcata L. Knighton, Leicester, October 14, 1930.—G. J. V. Bemrose. "This is var. *tenuifoliolata* Vuyck."—Britton.

Medicago minima (L.) Bartalini. [B.28.] Seaside banks in several places near Seasalter, Whitstable, E. Kent, August 3, 1930.—J. E. Lousley.

Trifolium arvense L., var. Cothill, Berks, July 1930.—G. C. Druce. "An extraordinarily fine growth of *arvense*, var. *strictius* Koch = *T. Brittingeri* Weitenw."—Drabble.

Trifolium subterraneum L. Orley Common, S. Devon, May 12, 1930; coll. E. D. Morgan, comm. H. Foster.

Dorycnium rectum (L.) Ser. Barry Dock, Glamorgan, August 1930. —G. C. Druce.

Lathyrus tuberosus L. Barry Dock, Glamorgan, September 14, 1930. This species has long been established at the above locality. There is a patch about four yards square which is slowly increasing in size each year. Its mode of introduction is uncertain, but probably with ballast. —R. L. Smith and R. Melville.

Lathyrus tuberosus L. [B.6.] Near Fyfield, North Essex, July 27, 1930. I was shown the locality for this plant by some village boys, who are well acquainted with it under the name of "The Fyfield Pea." The characteristic tubers are extremely difficult to dig up for examination, and the plant grows both in the standing corn and the surrounding hedges. Dr Walker-Arnott's statement that the flowers fall off without forming pods is probably due to the fact that the Pea is cut with the corn. It has been known here by farmers since about 1800.—Leg. J. E. Lousley. "Is not the fact, if it be a fact, that the flowers drop off before the fruit is formed, due to the plant having learnt to increase itself by its tuberous runners, and so does not trouble to make seeds, as in other analogous cases? How can cutting the corn make its flowers fall off if they were ever advanced enough to make fruit before that operation? Naturally if cut before it had a chance the flowers would fall or fade."—Wolley-Dod.

Lathyrus Nissolia L. Torquay, Devon, June 13, 1930; coll. E. D. D. Morgan, comm. H. Foster.

Tetragonolobus purpureus Mch. [3740.] Fallow field, Hook, Surrey, October 5, 1930. Notable for its crimson-blackish flowers. It is the *Lotus Tetragonolobus* L. of Druce's *British Plant List*.—C. E. Britton.

Lotus hispidus Desf. Dartmouth, S. Devon, June 12, 1930; coll. E. D. MORGAN, comm. H. FORSTER.

Lotus angustissimus L. Old garden ground above cliffs, Polperro, Cornwall. On account of the robust growth and unusually stout pods I have sometimes suspected this plant of being *angustissimus* × *hispidus*, but the characters are essentially those of the former species. It grew in a derelict garden plot and probably had benefitted by the comparative richness of the soil.—F. RILSTONE.

Lotus angustissimus L. St Lawrence's Valley, Jersey, July 1, 1930.—Bro. LOUIS ARSENE.

Vicia angustifolia (L.) Reichard, var. *typica* Rouy. Pont Marquet, Jersey, June 1, 1928.—Bro. LOUIS ARSENE.

Vicia tetrasperma Moench, var. *tenuissima* Druce. Near Pamber, N. Hants, September 1930.—G. C. DRUCE.

Vicia bifoliolulata Rodrig. Clifton, July 1930. Cultivated from seeds brought from the Cala Mesquieda, Minorca, 1905 (*loc. class.*). Endemic. —J. W. WHITE.

Spiraea Filipendula L. Near Bingham, Notts, July 1930.—F. A. SOWTER. " Luxuriant specimens."—BRITTON.

Rubus ——. Castle Eden, Co. Durham, July 25, 1930.—R. J. BURDON. " Clearly a poor shade-grown *dasyphyllus*. On the whole, material a good deal knocked about, especially stem-pieces. Several of the panicles, which seem rather more robust, are probably from a different root; they are rather less characteristic in armature, and may have a second influence in their parentage. Two characteristic stem pieces and one panicle are the minimum of material for a sheet. This rule is not followed in the present gathering."—H. J. RIDDELSDELL.

Potentilla erecta × *procumbens*. Banstead Heath, Surrey, June 29, 1930.—C. E. BRITTON.

Alchemilla vulgaris L. Langree, Jedburgh, July 3, 1930.—R. J. BURDON.

Alchemilla pastoralis Buser. Middleton-in-Teesdale, Durham, August 1930.—G. C. DRUCE.

Acaena anserinifolia (Forst.) Dr. Trendlebeare Down, S. Devon, June 18, 1930; coll. E. D. MORGAN, comm. H. FOSTER. " Under the name of *A. Sanguisorbae* Vahl, Dunn says ' A native of New Zealand, which was found by Mr W. R. Martin on Heytor Down, Dartmoor, Devonshire.' How it came to this bleak moor is exceedingly difficult to determine, but it is almost certain that it was carried thither by reason of its clinging seeds, which would be carried on the fur of animals or the clothes of human beings."—H. Foster.

Rosa stylosa Desv., var. *systyla* Baker. Under Wavering Down, Winscombe, N. Somerset, July 10, 1930, October 1, 1930. Flowers pink. —Ida M. Roper. "Good typical *systyla* Baker."—Wolley-Dod.

Rosa micrantha Sm. Lambourne, W. Cornwall, October 10, 1930.—F. Rilstone. "A very ordinary form of *R. micrantha* Sm., var. *typica*." —Wolley-Dod.

Rosa omissa Déségl. Dwarf bushes in hedgebanks, Polperro, Cornwall, October 6, 1930.—F. Rilstone. "I think this is *R. Sherardi*, f. *pseudo-mollis* (E. G. Baker) W.-Dod, but some *tomentosa* form is not obviously excluded, if indeed *pseudo-mollis* does not really belong to that species and not to *Sherardi*. I have recently learnt that long persistence of the sepals is not at all a conclusive feature of *R. Sherardi* and its varieties. Though it is an unusual fault to find, these specimens are gathered too late. Glands, hairs, and often the best leaflets are deciduous after about the middle of September."—Wolley-Dod.

Rosa pimpinellifolia × *tomentosa*. Selkirkshire, August and October 1930.—I. M. Hayward. "This is one of the innumerable forms of *R. spinosissima* crossed with one of the Villosae. It is always difficult, if not impossible, to diagnose which species of the latter is involved, whether *mollis*, *Sherardi*, or *tomentosa*. From geographical considerations *tomentosa* is quite a possibility, while there is not much indication of *mollis*. I classify most of these indefinite hybrids under ×*R. Sabini*, though normally I believe that to be *spinosissima* × *mollis*. A peculiarity in this gathering is the markedly emarginate terminal leaflets, not well seen in all specimens. The oblique bases of the lateral leaflets are derived from the *spinosissima* parent, but it is more exaggerated here than I have seen before."—Wolley-Dod.

Rosa multiflora Thunb. Hedge, Puttenham, Surrey, July 1930.—G. C. Druce and F. Clarke. "A garden escape, of course, and I cannot verify the name, though it looks right. It would have been interesting to know how far from human habitations it was found, and whether it appeared well established."—Wolley-Dod. "*R. multiflora* Thunb. belongs to the section Synstyleae. Related to it is the common Crimson Rambler of the gardens."—Britton. "The nearest house had no *multiflora* in the garden. It was a large bush in a hedge."—Druce.

Pyrus communis L., var. *Deseglisei* Rouy & Camus. Yate Lower Common, West Gloucester, April 24 and August 11, 1930. Only two trees are now known to exist in the locality and they are so old and full of dead wood that one fears they cannot long survive.—J. W. White. "It appears doubtful to me whether this interesting pear has been correctly identified. The var. *Deseglisei* belongs to the glabrous *P. Piraster* Bor., whereas this plant evidently comes under the more hairy *P. Boroeana* Rouy & Camus."—BRITTON. "For notes on this plant see *Rep. B.E.C.*, 222, 1917, and 820, 1919, and *Wats. B.E.C.*, 62, 1917-18."—JACKSON.

Sorbus Aria Crantz, var. *lanifera* Kern. Border of a limestone wood on the Cadbury ridge above Clapton Wick, North Somerset, May 27, June 18, and August 20, 1930. A solitary tree of 40 feet with foliage hoary-tomentose on both surfaces, but becoming bald above towards autumn. Specimens have been twice distributed through the B.E. Club in hope of their being identified with some named variety, but it was only a few months ago that our lamented friend, C. E. Salmon, discovered that Kerner had given the name *lanifera* to a corresponding form similarly isolated in Central Europe. See *Journ. Bot.*, 175, 1930. Damaged leaves and flower-buds are the work of swarms of beetles and caterpillars that infested the tree in May and fell in showers on the gatherer of these sprays. I have not met with the plant found in Leigh Woods, 1892, by the Rev. Aug. Ley, and accepted as *lanifera* by Prof. Hedlund (*loc. cit.*).—J. W. WHITE.

Crataegus monogyna Jacq., var. *fissa* (Poiret). The Parks, Oxford, October 1930.—G. C. DRUCE.

Crataegus heterophylla Flugge. Tiverton, N. Devon, October 1930.—G. C. DRUCE and Col. WATTS. "Alien, of course, but I do not think it was planted."—DRUCE.

Sedum sexangulare L. Torre, S. Devon, June 26, 1930; coll. E. D. MORGAN, comm. H. FOSTER.

Epilobium hirsutum L., var. *villosissimum* Koch. Oakham, Rutland, September 15, 1930.—G. J. V. BEMROSE.

Epilobium roseum Schreber. [B.16.] Moist roadside near Hever, W. Kent, August 4, 1930. Fairly plentiful around Hever and Edenbridge. —J. E. LOUSLEY.

Epilobium roseum Schreber. Garden weed, Chester, June 1930.—C. WATERFALL.

Bupleurum fruticosum L. British Camp, Hereford, July 26, 1930.—G. J. V. BEMROSE. "Yes, but it is not a British plant. It is the only shrubby umbellifer hardy in Europe."—JACKSON.

Bupleurum opacum Lange, var. *nanum* Koch. Sands of St Ouen's Bay, Jersey, July 12, 1930.—Bro. LOUIS ARSENE.

Bupleurum tenuissimum L. Shingle near Seasalter, E. Kent, September 8, 1930; coll. J. E. COOPER, comm. G. C. BROWN.

Apium nodiflorum (L.) H. G. Reichb., var. *pseudorepens* (H. C. Wats.) Dr. Shalford, Surrey, August 7, 1930.—R. J. BURDON. "This plant is quite interesting. At the Shalford locality, it was sending horizontal runners along the mud of the pond, and rooting at every joint. Also the leaflets were ± rotundate. But the peduncles are too short for *A. repens* (L.) H. G. Reichb. On the pond *A. nodiflorum* flowered and fruited, but the plants on the mud were shy of flowering. It is interesting that so distinct a mud-form should grow alongside the terrestrial form and that both should differ from the plant of ditches and streams." —LITTLE.

Chaerefolium sylvestre (L.) Schinz & Thell., var. *angustisectum* Dr., vergens. Autumnal leaves, Tiverton, N. Devon, October 1930.—G. C. DRUCE.

Peucedanum officinale L. [B.3.] Extremely abundant on the slopes facing the sea at Tankerton, near Whitstable, E. Kent, August 3, 1930. —J. E. LOUSLEY.

Galium erectum Huds. [864.] Near Wilbury Hill, Beds, June 3, 1930.—J. E. LITTLE. "Excellent examples of *G. erectum*."—BRITTON.

Galium sylvestre Poll. Chalk Downs near Goring, Oxon, June 1930.—H. J. RIDDELSDELL.

Galium uliginosum L. Banks of Tweed, near Ashestiel, Selkirk, July 8, 1930.—R. J. BURDON.

Valerianella dentata (L.) Poll. Near Cinderhill, Nottingham, June 27, 1930.—R. BULLEY.

Filago germanica (L.) Huds. Heathy ground, near Papplewick, Notts, August 25, 1930.—R. BULLEY. "One specimen of *F. spathulata* was in this set."—BRITTON.

Filago minima Pers. Sandy field, Papplewick, Notts, August 25, 1930.—R. BULLEY.

Filago minima Pers. Cothill, Berks, July 1930.—G. C. DRUCE.

Ambrosia artemisifolia L. St Anne's-on-the-Sea, September 6, 1902. Contr. NAT. MUS. WALES, CARDIFF.

Bidens cernua L. Darenth Marshes, W. Kent, August 15, 1929.—I. HELSBY.

Bidens tripartita L. Canal side, Nottingham, September 17, 1930.—R. BULLEY.

Achillea nobilis L. Barry Dock, Glamorgan, August 1930.—G. C. DRUCE.

Achillea ——. Hortal, Ely, Cardiff, July 7, 1930. I first found this interesting plant at Splott, Cardiff, two years ago, and removed it to my garden, where it flourishes.—R. L. SMITH.

Matricaria ? decipiens C. Koch. Burton-on-Trent, Staffs, August 1930.—G. C. DRUCE.

? *Hieracium cumbriense* Hanbury. Barras, Westmorland, August 1930.—G. C. DRUCE.

Hieracium pellucidum Laest. Lambridge Wood, Oxon, July 1930.—G. C. DRUCE.

Hieracium diaphanoides Lindeb. Det. J. CRYER. Wingfield Manor, Derbyshire, July 3, 1926.—R. BULLEY.

Hieracium ——. [P.87.] Newhaven, Sussex, July 1929.—G. C. DRUCE. " This, teste Zahn, is *sub-lepistoides* Zahn."—DRUCE.

Hieracium ——. [2463.] L.N.E. Railway embankment, Colchester. N. Essex, October 30, 1930.—G. C. BROWN.

Leontodon nudicaule (L.) Banks, var. *lasiolaena* (Bisch.) Dr. Sandhills, St Osyth, N. Essex, July 20, 1930. A few plants of var. *leiolaena* grew intermixed with these.—G. C. BROWN.

Taraxacum glauciniforme Dahlst. Heath, Beds, May 1929.—G. C. DRUCE.

Taraxacum laeistophyllum Dahlst. Hinksey, Berks, May 1929.—G. C. DRUCE.

Taraxacum britannicum Dahlst. Oxford, May 1929, in *Rep. B.E.C.*, 30, 1926.—G. C. DRUCE.

Taraxacum hamatum Raunk. Shefford Woodlands, Riever, Berks; Ledbury, Hereford; Ham, N. Hants; Byfleet, Surrey; Little Bedwyn, Wilts, May 1929.—G. C. DRUCE.

Lactuca saligna L. Shingle by sea, Swalecliff and Seasalter, E. Kent, August 26 and September 28, 1930; coll. J. E. COOPER, comm. G. C. BROWN.

Ledum oelandicum Oeder. (*L. latifolium* Jacq.). Naturalised in some quantity in two separate localities at Normandy, Surrey, July 1930.—G. C. DRUCE and C. E. MARKS. " *L. groenlandicum* Oeder."—JACKSON.

Limonium binervosum C. E. Salmon. [2459.] Sandhills, St Osyth, N. Essex, July 17, 1930. Abundant in one spot where but few plants had been seen in previous years.—G. C. BROWN.

Ligustrum vulgare L., var. *aureum*. With golden-yellow flowers. In a hedge, with the ordinary white-flowered form, at Goring, Oxon, June and July 1930. Near a house and probably introduced. I put it under *vulgare* as I do not know of any yellow-flowered distinct species, nor indeed, of any such variety of *vulgare*. I could detect no distinction except that of the flower colour.—H. J. RIDDELSDELL. "*Ligustrum vulgare*, var. *fl. aureis*. I do not know a yellow-flowered form of the common privet, and it is difficult to judge of it on this specimen, the flowers of which have dried brown."—JACKSON.

Gentiana germanica Willd. Assenton, Oxon, September 1930.—G. C. DRUCE.

Gentiana campestris L. Brimfield, Berks, September 1930.—G. C. DRUCE.

Asperugo procumbens L. Cherry Hinton, Cambs, June 1930.—G. C. DRUCE and GILBERT-CARTER.

Pulmonaria longifolia Bor. Wootton, Isle of Wight, May and June 1930.—J. W. LONG.

Myosotis ? sylvatica Hoffm. By a stream in a wood, Great Tew, Oxon, May 22, 1930. In small quantity. If it is *sylvatica*, it would, I believe, be a new county record.—H. J. RIDDELSDELL. "Correct."—WADE. "Sent from this place by G. C. Druce to the Club (see p. 270, 1912). It was originally planted there with *Potentilla fruticosa* and other plants by Mr Boulton, a former owner of the park. Other localities are given in my 'Flora of Oxfordshire,' p. 296, but in this county it is not a native."—DRUCE.

Myosotis arvensis (L.) Hill, forma. Shingly ground, Sully Island, Glamorgan, July 1930.—A. E. WADE. "Merely stunted *arvensis*, is it not?"—DRABBLE.

Myosotis arvensis Hill. Roadside, Crantock, W. Cornwall, July 28, 1930.—I. M. ROPER. "This plant comes very near to forms I have called var. *stricta* Bosch. Prodr. Fl. Batavae, p. 160 (1850). Persoon has a var. *simplex* which is probably the same. I have similar forms under cultivation and await the results before any opinion upon the true status of any of the varieties of *M. arvensis*."—WADE.

Myosotis versicolor Sm., sub-var. *dubia* Rouy. Cloverfield, Cefn Rhwawg, Abercarn, Monmouth, June 6, 1930.—A. E. WADE.

Cuscuta epilinum L. Easton Maudit, Northants, July 1930.—G. C. DRUCE.

Solanum nigrum L., var. *chlorocarpum* Spenn. [3738.] Cultivated field, Hook, Surrey, October 5, 1930. Ripe fruit bright green, finally becoming yellowish-green. This plant does not appear in the *British Plant List*, where, however, there is var. *luteo-virescens* (Gmel.), which is not identical, as the berries in that are less green.—C. E. BRITTON.

Atropa Belladonna L. Very rare in Jersey. Found in a hedge at St Saviour's, July 1, 1930.—Bro. LOUIS ARSENE.

Veronica officinalis L. Glen Luce, Wigtown, August 1930.—G. C. DRUCE. " Yes, the capsules are more deeply emarginate than in most English specimens."—DRABBLE.

Veronica Anagallis-aquatica L., var. *ambigua* (Krosche). [P.85.] Lechlade, Gloster, July 1929.—G. C. DRUCE. " Yes, var. *ambigua*."—BRITTON.

Veronica aquatica Benq. Binsey, Oxon, July 1929.—G. C. DRUCE. " Yes."—BRITTON.

Veronica persica Poir., var. *Corrensiana* (Lehm.). [3736.] Cultivated field, Lower Morden, Surrey, September 28, 1930.—C. E. BRITTON.

Veronica agrestis L., f. *alba*. Garden weed, Hallatrow, N. Somerset, June 25, 1930.—IDA M. ROPER. " Var. *Garckiana* P. Fourn."—BRITTON.

Veronica agrestis L. (some show lusus *calycida*). [848.] Allotment, Storehouse Lane, Hitchin, Herts, April 30, 1930.—J. E. LITTLE. " Very young. In this state the leaves approximate in shape and dentition to those of *V. polita*. The characters of the sepals and capsules are, however, those of *V. agrestis* L., and it is the common var. *Garckiana* P. Fourn."—BRITTON.

Veronica agrestis L. (some show lusus *calycida*). [849.] Allotment, Highbury, Hitchin, Herts, May 3, 1930.—J. E. LITTLE. " Preceding remarks also apply to this."—BRITTON.

Veronica hederifolia L. The Westra, Dinas Powis, Glamorgan, May 5, 1930.—A. E. WADE.

Veronica hederifolia L., var. *triloba* (Opiz) Beck. The Westra. Dinas Powis, Glamorgan, May 5, 1930.—A. E. WADE. " The plant is slender, the leaves small and mostly three-lobed, so I suppose this may pass as the 'variety'."—DRABBLE. " Probably no more than juvenile representatives of the species, which, at a later stage, would exhibit the 5 or 7-lobed or toothed leaves. It is not difficult to detect leaves 5-lobed on these specimens."—BRITTON.

Euphrasia ——. Philpots, E. Grinstead, E. Sussex, August 30, 1930. —R. J. BURDON. " *E. anglica* Pugsley."—PEARSALL and DRABBLE.

Euphrasia nemorosa M. J. Löhr. [A.200.] Chalky ground at Southawke, Waldingham, Surrey, August 8, 1929.—J. E. Lousley. "An extremely unusual gathering, and somewhat variable. I am of opinion that all the plants belong to one species—*E. nemorosa*—but to a form of it hitherto undescribed. The noteworthy characters are (1) the unusually high branching (numerous, short, ± erect branches nearly to the top of the stem—most of them above the middle of the stem); (2) the unusually numerous and stout cilia on the margins of the foliage. This character is not found on all the plants but very few, if any, would properly fall under var. *ciliata* Drabble. The plants are scarcely mature and the valuable evidence afforded by the capsules is nearly absent."—Pearsall. "A very unusual form of *nemorosa*; the leaves are very densely ciliate even for var. *ciliata*, and in some of the specimens the flowers are larger than usual."—Drabble.

Euphrasia nemorosa Pers. Wakerly Wood, Northants, September 1930.—F. A. Sowter. "Exceptionally robust and copiously branched examples of *E. Kerneri* (auct. angl.) = *Pseudo-Kerneri* Pugsl.".—Pearsall. "Not *E. nemorosa*; I call this *E. Kerneri* (auct. angl.) = *E. Pseudo-Kerneri* Pugsl., with unusually small flowers, and stout bushy growth. It is a pity more care was not taken in preparing this material, as it is a very uncommon form."—Drabble.

Euphrasia micrantha Reichb. (*E. gracilis* Fries). Inchdowrie, Glen Clova, Angus, August 1930.—G. C. Druce. "Yes."—Pearsall and Drabble.

Euphrasia nemorosa H. Löhr. [930.] Hitchin, Herts, September 9, 1930.—J. E. Little. "Yes."—Pearsall and Drabble.

Euphrasia nemorosa H. Löhr. Assenton, Oxon, September 1930.—G. C. Druce. "Yes, *E. nemorosa*; in some of the specimens the flowers are unusually brightly coloured."—Drabble.

Euphrasia Rostkoviana Hayne. [3665.] Whitemoor Common, Surrey, August 8, 1930.—C. E. Britton. "These plants are much nearer *E. Rostkoviana* than others we have recently seen from the same station, but I think they are better under *E. anglica*. Taking the gathering as a whole, there are few large flowers and their main feature is the exceptional length of the lower lip, which is somewhat misleading—dorsally they do not often exceed 9 mm. There is evidence of the elongation of the tube, but this character is not marked."—Pearsall.

Euphrasia ——. Castle Eden, Durham, July 25, 1930.—R. J. Burdon. "*E. borealis* Towns."—Pearsall and Drabble.

Euphrasia ——. Ebernoe, Sussex, August 10, 1930.—R. J. Burdon. "*E. anglica* (type and var.)."—Pearsall. "*E. anglica* Pugsley."—Drabble.

Euphrasia nemorosa Pers. [3673.] Pray Heath, Surrey, August 17, 1930.—C. E. BRITTON. "*E. nemorosa*, var. *ciliata*."—PEARSALL and DRABBLE.

Euphrasia nemorosa Pers. [3687.] Horsell Common, Surrey, August 24, 1930.—C. E. BRITTON. "*E. nemorosa*, var. *ciliata*."—PEARSALL and DRABBLE.

Euphrasia borealis Wettst. [3681.] Banstead Downs, Surrey, August 10, 1930.—C. E. BRITTON. "These plants have a certain resemblance in colour and habit to *E. borealis*, but I should refer them to *E. nemorosa* on weight of evidence. The capsules are too small for *E. borealis* and the calyx not sufficiently accrescent in fruit."—PEARSALL. "Not *borealis*; I think this comes under *nemorosa*."—DRABBLE.

Bartsia viscosa L. Stream adjoining Salcombe Estuary, September 1929.—I. HELSBY.

×*Mentha villoso-nervata* (Opiz) J. Fraser. Cultivated at Kew, from Friday Street, Surrey, August 30, 1930.—J. FRASER.

Mentha citrata Briq. Vanus Lane, Chiddingfold, Surrey, September 19, 1930.—R. J. BURDON.

Mentha aquatica L., var.? Canal, Sawley, Derbyshire, August 10, 1930.—R. BULLEY.

Mentha arvensis L., var. *cuneifolia* Lej. et Court. Cultivated at Kew from Thames banks, Hampton Court, Middlesex, August 11, 1930.—J. FRASER.

Mentha Pulegium L. Mortimer, Berks, September 1930.—G. C. DRUCE.

Satureia Acinos (L.) Scheele. Cultivated ground near Papplewick, Notts, August 23, 1930.—R. BULLEY.

Prunella vulgaris L., var. *nemoralis* Béguinot. By the Gannel, Crantock, W. Cornwall, July 28, 1930.—IDA M. ROPER.

Lamium album L. Llangollen, Denbighshire, N. Wales, August 29, 1930.—C. WATERFALL.

Lamium Galeobdolon (L.) Crantz. La Saline, Jersey, May 11, 1929. Not common in the Island.—Bro. LOUIS ARSENE.

Teucrium Botrys L. Micheldever, N. Hants, September 1930.—G. C. DRUCE.

Salsola Kali L., var. *tenuifolia* Tausch. Sandy fields, St Ouen's Bay, Jersey. Not yet reported from the Island. Growing with *Viola nana*, *Arenaria Lloydii*, *Saxifraga tridactylites*, etc., August 11, 1930.—Bro. LOUIS ARSENE.

Polygonum dumetorum L. Tubney, Berks, September 1930.—G. C. DRUCE.

Polygonum lapathifolium L. [3707.] Wisley, Surrey, August 31, 1930. The var. *genuinum* of Gren. et Godron.—C. E. BRITTON.

Polygonum lapathifolium L., var. *tomentosum* Beck. [3663.] Whitemoor Common, Surrey, August 17, 1930. Beck (*Fl. N.Ö.* i., 323) describes the variety as having stems erect and little-branched, or, prostrate and more branched, the leaves oblong lanceolate, narrowed at each end, and all, with the exception of the uppermost, woolly arachnoid. The plants distributed are in agreement with this description.—C. E. BRITTON.

Polygonum ——. [3706.] Wisley, Surrey, August 31, 1931. This plant attracted notice in a cultivated field where *P. Persicaria* and *P. lapathifolium* were both abundant. The spikes of flowers were paler than the first, and more slender than either. A study of its characters suggested that it was a hybrid between these two species, a conclusion that was supported by the discovery that large well-formed fruits were devoid of contents. For the following note, I am greatly indebted to Mr W. H. Pearsall, who has made a very careful study of the specimen received.—C. E. BRITTON. "This plant is interesting. Mr Britton informs me that it was growing near abundant *P. Persicaria* (1), and *P. lapathifolium* (2), but it is clearly neither of these species alone but shows the influence of each in the following characters. The stem is strongly marked with red on the sun-touched side only. The flowers, on the whole, are paler than those of normal (1), but all the perianths have their lower parts ± glandular, although less so than is usual in (2). The sheaths have their actual surfaces glabrous as in (2) but beset with scattered hairs (especially on the veins) less numerous than in (1), and their marginal cilia are also less strong than in that species. The spikes are slender and ± interrupted and the pedicels sparsely glandular. The leaves are broadly lanceolate, subequally attenuate above and below, not acuminate but subacute with the margins at the actual apex convex. They are ± hairy on both sides and an occasional glandular hair may be found on the lower surface. There are few mature fruits but these are very suggestive of hybridity. Most of them resemble those of (1)—are black, smooth, shining, nearly round (2.5 × 2.0 mm.) and shortly acuminate. An occasional fruit is longer (3.0 × 2.0 mm.) but not broad enough for (2) and invariably empty. The styles are always united for nearly or quite half their length, becoming divergent and not merely patent but vertically reflexed. In my judgment these characters point to *P. Persicaria* × *P. lapathifolium*."—PEARSALL.

Polygonum Persicaria L. Llangollen, Denbighshire, N. Wales, August 27, 1930.—C. WATERFALL.

Polygonum nodosum Pers. [B.14.] Mitcham Common, Surrey, July 26, 1930. A large colony by a streamlet. Seems to me very typical of the species.—J. E. LOUSLEY. "No form of *P. nodosum*, but just ordinary *P. Persicaria*. W. H. Pearsall concurs."—BRITTON. "There is nothing even remotely suggesting *nodosum* (*petecticale*) in my specimen. The leaves, pedicels, and perianths are all eglandular, the fruit surface is quite smooth, and many of the fruits are trigonous. It is *P. Persicaria*, var. *elatum*."—DRABBLE.

Polygonum petecticale Dr. Britons Pond, Guildford, Surrey, August 7, 1930.—R. J. BURDON. "Correct. A similar form to my plant [3598] from Esher."—BRITTON.

Polygonum petecticale Dr. [3598.] Esher Westend, Surrey, September 15, 1929.—C. E. BRITTON.

Polygonum petecticale Dr. [3655.] Near Mortlake, Surrey, August 16, 1930. The var. *ovatum* of authors.—C. E. BRITTON.

Polygonum petecticale Dr., var. *erectum* (Rouy). [3650.] Near Mortlake, Surrey, August 16, 1930. Seen for two seasons in preceding locality. It appears to agree well with the plant described by Rouy as *P. lapathifolium*, race *P. nodosum*, var. *erectum*. The principal features are the erect stem with nodes not much swollen, the lanceolate longly acuminate leaves and erect spikes.—C. E. BRITTON. "Very interesting; form and surface of fruit, and the glandular leaves point to *petecticale*, and, if so, no doubt it is var. *erectum* (Rouy). It is rather disturbing, however, to find entirely glandless peduncles and perianths in *petecticale*. Was it growing with normal *petecticale* and *Persicaria*?"—DRABBLE.

Polygonum Hydropiper × *Persicaria*. [3750, etc.] Near Brookwood, Surrey, October 18, 1930. Growing with species *P. Hydropiper* and *P. Persicaria*, and appearing to be of mixed parentage. The fruits are plentifully produced and vary in shape from the rounded form of *P. Persicaria* to the more elongated form of *P. Hydropiper*.—C. E. BRITTON. "A good intermediate."—PEARSALL.

Polygonum minus×*Persicaria*=*P. Braunianum* F. Schultz. [O.39.] Binsey, Oxon, August 1929.—G. C. DRUCE. "Quite possibly, if it grew with the supposed parents."—DRABBLE. "Immature, with but few expanded flowers. The elongate-lanceolate leaves, broader than is usual with *P. minus*, and longer in proportion to breadth than in *P. Persicaria*, the comparatively stout stems, and linear inflorescences, appear to indicate that this plant is correctly identified as the hybrid named."—BRITTON.

Rumex sanguineus L. Hort. Origin. The Grounds, Lymm, Cheshire, May 1930.—C. WATERFALL.

Rumex pulcher L. Polperro, E. Cornwall. Flowers, June 14, 1930; leaves, October 2, 1930.—F. Rilstone.

Muehlenbeckia complexa Meissn. New Zealand, shrub, well-established on a hillside at St Saviour's, Jersey, September 11, 1930.—Bro. Louis Arsene. "Yes."—Jackson.

Thesium humifusum DC. Barry Dock, Glamorgan, July 10, 1930. An established species. I gathered 34 sheets from one large healthy plant that continued to produce flowers for four months.—R. L. Smith.

Euphorbia Cyparissias L. Churn, Berks, July 1930.—G. C. Druce.

Ulmus minor Mill., var. *sarniensis* (Loudon). Easton Neston, Northants, November 1930.—G. C. Druce. "This is the tree commonly known as the Wheatley Elm, *U. nitens*, var. *Wheatleyi*, the leaves of which are broader than the Cornish elm. The tree may generally be recognised at a glance by its pyramidal habit. Henry (Elwes & Henry, vii., p. 1891 (1913)) considered that this elm, which is sometimes sold in Germany and Holland under the erroneous name of *U. campestris*, var. *monumentalis*, is in all probability the same as that propagated by Loddiges as *U. sarniensis*, as it is also frequently called the Jersey or Guernsey elm, but London's *U. campestris*, var. *sarniensis*, judging from the description seems to refer to a different tree. There is also no reason to suppose that Miller's description of *U. minor* referred to the Cornish elm, which is not 'common in some parts of Hertfordshire & Cambridgeshire' as stated by Miller in his description of *U. minor* (*Gard. Dict.*, ed. 8, No. 6 (1768)."—Jackson. "My friend, Mr Bruce Jackson, as it will be seen, denies that *U. minor* Mill. is the Cornish Elm, probably owing to his notes having been confused. If our members will refer to Miller's *Gardener's Dictionary* of 1768, where *U. minor* is first established, they will find there is no reference to its occurrence in the counties of Herts and Cambridge as mentioned by Mr Jackson. So that any inference drawn from non-existing data must be fallacious. The localities cited by Miller are loosely given as 'Hedgerows in several parts of England,' which applies equally well to Cornwall and Devon as to Cambridge and Herts. Moreover, he says 'by some it has been called the Irish Elm,' which indicates it is a western not an eastern tree, and Prof. Henry gives Ireland in its distribution. If the description of *U. minor* is carefully read 'foliis oblongo-ovatis glabris acuminatis duplicato serratis. The smooth narrow-leaved Elm, by some called the upright Elm . . . The branches smooth . . . erect,' it will be seen that it can only apply to the Cornish Elm and its variety, the Wheatley Elm. Miller also goes on to say of *U. minor* 'leaves are narrower and more pointed than the English Elm and are somewhat later in coming out in the Spring than those, but continue longer in the Autumn,' which is true of the Cornish Elm. I have seen green leaves attached to the branches of the Wheatley Elm as late as November. Miller's description of *U. minor* is practically repeated by Martyn in his edition of the *Gardeners' Dictionary* of 1807. Therefore, I contend that *U. minor* Mill. = *U. stricta* Lindley. The latter was established in the *Synopsis*, 227, 1829, but he makes no reference to Miller, although his description is practically that of Miller's *U. minor*, with which it is synonymous. Loudon (*Arboretum*, iii., 1376) gives var. *cornubiense* = *stricta* Lindl. and var. *sarniensis* Loud., based on *U. sarniensis* Loddiges Cat., 1836, with an inadequate description, ' differing very little from the species.' It is suggested that this does not apply to the Jersey Elm, but that is the vernacular name given to it by Loudon, and there seems no need to suspect that *sarniensis* Loddiges—the original trivial—is not the same." —DRUCE.

Urtica dioica L., var. *umbrosa* (Weddell as sub-var.) Rouy Flore de France, xii. (1910), 273, " tiges et feuilles pubescentes à poils acérés rares." Banks and islands of River Thames, near Goring, Oxon, and Berks, June 25, 1930. Leaves remarkably soft, almost velvety. Stinging hairs hardly to be found on leaves, and rare on petioles and stems. These actual specimens were gathered on an island on the Oxford side of the river.—H. J. RIDDELSDELL.

Alnus incana Medik. Roundsea Wood, near Cork, N. Lancs, June 22, 1930.—W. A. SLEDGE. " Yes. W. H. Pearsall sent me some from this station some years ago. T. J. Foggitt recently wrote that he had seen it (planted with pines) in Glen Clova, which is a new station to me."—LITTLE. " Correct. Presumably introduced."—JACKSON.

Salix aurita × *caprea* (*S. capreola* J. Kern.). [579.] Whyteleafe, Caterham Valley, Surrey; catkins, April 14th; leaves, July 7, 1929.—J. FRASER.

Salix cinerea × *viminalis*, f. *ferruginea* (G. Anderss.). [741.] Tilburstow Hill, Surrey; catkins, April 13; leaves, July 27, 1930.—J. FRASER.

Populus canescens Sm. ♂ (or *P. canescens* × *tremula* ?). Planted, Old Park Road, Hitchin, Herts, February 18, March 15, October 22, 1930. Two trees, not more than 20 ft. high, with slender branches which suggest *P. tremula*. The leaves are those of *P. canescens*, and the bud-bracts are hairy though rather acute. The floral bracts are of the lighter colour of *P. canescens*, rather than the darker colour of *P. tremula*.—J. E. LITTLE. " *P. canescens*, I should say undoubtedly. I can see no evidence of hybridity here."—JACKSON.

Populus alba L. ♀ (sucker leaves). Planted, Wymondley Road, Hitchin, Herts, March 27, October 23, 1930.—J. E. LITTLE. " Yes, showing the characteristic 3-lobed leaves. The male flower of this species is rarely if ever found."—JACKSON.

Orchis O'Kellyi Druce. Ballyvaghan, Co. Clare; coll. P. B. O'Kelly, June 1930, ex G. C. Druce.

Lilium pyrenaicum Gouan. Plentiful among bracken and male-fern on banks near South Molton, Devon. Stems quite 3 feet in height, often producing five or six flowers, June 30, 1930.—J. W. White. "A fine series of a very handsome plant."—Britton.

Paris quadrifolia L. Wood near Berkhamsted, Herts, May 21, 1929. —I. Helsby.

Juncus acutus L., var. *decompositus* Guss. The common form in Jersey. St Ouen's Bay, July 12, 1930.—Bro. Louis Arsene.

Juncus nodulosus Wahl. Near Langdon Beck, Durham (found there in 1909), August 1930.—G. C. Druce.

Juncus compressus Jacq. [B.37.] By pool, Swalecliffe, east of Whitstable, E. Kent, August 3, 1930.—J. E. Lousley.

Luzula sylvatica (Huds.) Gaud., var. *latifolia* Gerard. (Bulletin Société francaise: Duffour No. 1, 1911.) Very strong plant with leaves very wide—12 to 17 mm. Giffard Bay, Jersey, May 21, 1929.—Bro. Louis Arsene.

Potamogeton crispus L., var. *serratus* (Huds.). Canal, Market Harborough, Leicester, August 1930.—G. C. Druce. "Yes, but I agree with Fryer that this flat-leaved form is merely a state."—Pearsall.

Potamogeton pennsylvanicus C. & S. (autumnal state) (*P. Nuttallii* C. & S.). Near Elland, Yorks, August 1930.—G. C. Druce. "Very beautiful specimens of this."—Pearsall.

×*Potamogeton Lintoni* Fryer (*P. crispus* × *mucronatus*). Burton-on-Trent, Staffs, August 1930.—G. C. Druce. "Very good examples of this rare and little-known hybrid. They are more than usually valuable as they may be compared with *P. Bennettii*, from which they are quite distinct, and with *P. crispus*, f. *serratus*, which they closely resemble. Singularly enough, there is no description of this hybrid in Fryer's *Pots. Brit. Isles*, nor in any other British Flora. Dr Hagström does not describe it, as he had seen no specimens at the date of publication of his *Critical Researches* (1916). In March 1920, however, I sent him sheets of the Rev. W. R. Linton's original gathering—Canal, Renishaw, Derby, August 1, 1900—and these were determined by Dr Hagström as *P. crispus* × *Friesii*, confirming Fryer's view (*Journ. Bot.*, 366, 1900). Later in the same year Dr Druce added a second locality—Canal, Lichfield, Stafford—for this hybrid and these plants also were confirmed by Dr Hagström (*Rep. B.E.C.*, 250, 1920). As I saw the whole of Dr Druce's gatherings and have authenticated sheets of the Derbyshire plant, a brief description of the chief characters of the hybrid may be of use. Both the parent species show stem-sections which are oblong with rounded ends—the L/B ratio of *P. crispus* being nearly 2 : 1, and that of *P. Friesii* being 3 : 1. We should therefore expect, and we find, that the hybrid possesses a similarly compressed stem whose section is more than twice as long as broad. The habit of the Derbyshire form is similar to that of *P. Friesii*, but the Staffordshire form more closely resembles *P. crispus*, f. *serratus*, and is, indeed, easily mistaken for it. The leaves of the former are of a darker green, narrower, and possess a very obtuse rounded apex; those of the latter are olive green, wider and ± acute; they also frequently carry suggestions of the reddish tinge of the young leaves of *P. crispus*. The fruits of each, if formed, are sterile, but often *crispus*-like in outline. The distinctive character of the hybrid is the indistinct and scanty serrulation of the leaf margins. This can only be seen on leaves which are quite clean, and as the few, distant and minute denticles are easily abraded from older leaves the examination of young leaves under the microscope becomes essential, a lens being quite useless for this purpose. Often there are the merest traces of denticles near the apex only, but other leaves of the same plant will show an occasional tooth and numerous minute prominences (which normally form the bases of teeth) along a ± sinuated margin. Other useful characters in separating the hybrid from similar forms are the presence or absence of glands at the leaf-bases and the nature of the stipules and nervation. It is, perhaps, necessary to add that no gathering should be distributed until every plant has been authenticated."—PEARSALL.

Potamogeton compressus L., ad. var. *latifolius* Gray vergens. Market Harborough, Leicester, August 1930.—G. C. DRUCE. "Very carefully prepared specimens of this species. The width of the leaves on the sheet sent me is 4.0-4.5 mm., but many others of the same gathering—which I have seen previously—were 5 mm. wide. I do not think these width-forms deserve varietal rank but they come under f. *latifolius* Fischer (*Bayer. Pot.*, 97, 1907), which is synonymous. I have seen no British forms wider than these, although Hooker (*Stu. Fl.*, 435) says 'often ¼ inch broad' (=6 mm.). Scottish forms are usually longer, narrower and more longly acuminate than these."—PEARSALL.

×*Potamogeton Bennettii* Fryer (*P. crispus* × *pusillus*). Grangemouth, Stirling, August 1930.—G. C. DRUCE. "Very acceptable examples. Both British and Continental botanists long regarded this hybrid as *crispus* × *obtusifolius*. The former of these supposed parents possesses a stem-section nearly twice as long as broad; in the latter the length is slightly over twice the breadth. Any hybrid of these two species should therefore show a stem-section with a L/B ratio of approximately two. The hybrid, however, has a nearly round stem—only very slightly longer (in section) than broad—as in *pusillus*. The width of the leaves, too, would tend to be broader than in the specimens before us, if *obtusifolius* were one of the parents. Under the microscope the influence of *crispus* is well seen in the minute denticles on the leaf margins. The late Mr A. Bennett ultimately agreed with this determination, see *L.C.* (1925) 1959."—PEARSALL.

Potamogeton obtusifolius M. & K. [B.8.] In the Canal near Byfleet, Surrey, September 9, 1930.—J. E. LOUSLEY.

Zannichellia pedunculata Reichb. [B.18.] Brackish dyke near Seasalter, E. Kent, August 3, 1930.—J. E. LOUSLEY. "Quite good examples of this. Reichenbach described it as *Z. pedunculata*, var. *maritima*, in *Fl. Germ. Excurs.*, i., 7, 1830, but there is an earlier name for it as a species—*Z. maritima* Nolte, *Norit. Fl. Holsat.*, 75, 1826, and this should have preference. Earlier still it had been cited as a form of *Z. palustris*, under the name *pedicellata*, by Wahlenberg et Rosen in *Nov. Act. Upsal.*, viii., 227, 254, 1821. The characteristic fruits are well shown on these sheets. As usual, they vary considerably so far as the dorsal margin is concerned on the same plant. Some are dorsally nearly smooth and only slightly ridged; others are crenulate, and some strongly muricate. All the fruits are pedicellate and have a common peduncle. The styles are subequal in length to the carpels."—PEARSALL.

Ruppia rostellata Koch. [B.4.] Brackish ditch on the levels near Seasalter, Whitstable, E. Kent, August 3, 1930.—J. E. LOUSLEY. "Very nice examples of this. One member, however, reports an admixture of *R. maritima* on the sheet received by him, so examination of all specimens is desirable."—BRITTON.

Eleocharis uniglumis Schultes. Loch Dunvegan, Skye, July 1930.—W. A. SLEDGE.

Scirpus carinatus Smith. [B.10.] Large panicled form. Near Mortlake, August 16, 1930. The form I call *sublacustris* with large cymes—a tall stout plant approaching *lacustris*. The stem is trigonous for only a short distance below the panicle. The reproductive organs are better formed than in *subtriqueter*, and it is on this form that nuts are occasionally found.—J. E. LOUSLEY.

Scirpus carinatus Smith. [B.32.] Small panicled form. Near Mortlake, August 16, 1930. These plants are unfortunately a little young, but the anthers are fully formed. It is plain that they would never grow into plants with large cymes like B.10. They represent the hybrid-form I term *subtriqueter* with small cymes, stem trigonous for a considerable distance below the panicle, and upper leaves often extended into short leaves. In this form the reproductive organs are usually ill-developed.—J. E. LOUSLEY.

"*Scirpus carinatus* Smith." [B.26.] Aylesford, West Kent, August 24, 1930. This is ×*S. Scheuchzeri* Brügger (Neue Pflanzenbastarde der Schweizer-Flora in *Bericht der Naturforsch-Gesellschaft Graubundens*, *Jahrgang*, xxv., May 15, 1882), which is the plant described by Dr Druce from West Sussex as ×*arunensis*. The presence of *S. Tabernaemontani* is clearly seen in these plants in the glumes, which are asperous. The present gathering (all from one rootstock, like all my gatherings of *Scirpus*) is not so asperous in the glumes as some of the Medway plants. The stigmas are 2 (sometimes in *carinatus* they may be 3). The influence of the *triqueter* parent is seen in the trigonous upper stem.—J. E. LOUSLEY.

Scirpus Tabernaemontani Gmel. Rycote, Oxon, October 1930.—G. C. DRUCE.

×*Scirpus arunensis* Druce. [B.36.] Near Houghton Bridge, August 9, 1930. I consider *S. Scheuchzeri* Brügger to be the correct name of this plant with *S. Kukenthalianus* P. Junge and ×*S. arunensis* Druce as synonyms. The Arun plant shows considerable variation in the extent to which the glumes are asperous and the length of the trigonous portion of the upper stem and size of panicle. This, of course, is only to be expected in a hybrid.—J. E. LOUSLEY.

Scirpus triqueter L. [B.11.] Estuarine mud of Thames between Mortlake and Kew, Surrey, August 16, 1930. Entirely submerged at high tide.—J. E. LOUSLEY.

Scirpus Holoschoenus L. Barry Dock, Glamorgan, August 1930.—G. C. DRUCE.

Rhyncospora fusca Ait. [B.7.] Bog behind "The Moat," Thursley Common, Surrey, July 23, 1930. This plant is here very plentiful, but restricted to patches of peat, very moist, and free of almost all other vegetation. It was discovered here by the late Rev. E. S. Marshall.—J. E. LOUSLEY.

Carex lasiocarpa Ehrh. Askham Bog near York, July 9, 1930.—W. A. SLEDGE.

Carex flava L. Roundsea Wood, Haverthwaite, N. Lancs, June 22, 1930.—W. A. SLEDGE. "These are most interesting examples of this species. I have known this station for over thirty years and distributed examples from it in 1913. In correspondence, some botanists were inclined to think it a new species, but I have identical material from Vermont, U.S.A., some sheets of which show plants 32 inches high. In my judgment it is shade-grown *C. flava* but possessing characters not usually given in books. The beaks are noticeably arcuate, long, strongly ciliate, deeply bifid, but smooth in the notch. The glumes are lanceolate-acute, very gradually tapering to the ciliate apex. Many authorities—Bab., Gray, Bentham and Hooker—give 'blunt' for the apex, which is sometimes the case. The specimens are, unfortunately, too young to show mature fruits but are excellently displayed."—PEARSALL.

Carex flava L. [A.201.] Penhale Quarries, Mullion, W. Cornwall, May 23, 1929.—J. E. LOUSLEY. "The *C. flava*, var. *minor*, of Townsend, but better placed under *C. Oederi* as var. *oedocarpa*."—BRITTON. "Seems to be var. *minor* Towns., but without well-advanced utricle, it is difficult to be sure. I suppose, as both Druce and Salmon in *L.C.* give *oedocarpa* And. priority, that this is the name to be used. But the plant itself is in many characters more closely related to *lepidocarpa* than to *flava* proper, or to *Oederi*."—LITTLE.

Carex rariflora Sm. From various localities where collected by the late W. A. SHOOLBRED. Contributed by NAT. MUS. OF WALES, CARDIFF.

Carex aquatilis Wahl. Windermere, June 27, 1930.—W. A. SLEDGE.

Carex helvola Blytt. Lochnagar, S. Aberdeen, 1906, W. A. SHOOLBRED. Contributed by NAT. MUS. OF WALES, CARDIFF.

Carex canescens L. Holt House Wood, Kings Lynn, W. Norfolk, June 7, 1930.—IDA M. ROPER.

Carex divulsa Stokes. [679.] Hort. Hitchin. Ex Wimbotsham, W. Norfolk, July 1929, September 1930. I have now grown this *Carex* in my garden, 1926-1930, and wish to withdraw the name *C. contigua* × *divulsa* (*Rep. B.E.C.*, 930, 1928) in favour of *C. divulsa* Stokes. Will members kindly make the correction?.—J. E. LITTLE. "These well-developed plants, with the ripe fruits, leave no doubt as to their identity with *C. divulsa*."—BRITTON.

Setaria viridis Beauv. [B.23.] Disused gravel pits, Tamworth Lane, near Mitcham Common, Surrey, September 9, 1930.—J. E. LOUSLEY.

Setaria verticillata Beauv. Splott, Cardiff, Glamorgan, September 10, 1930. This rather rare adventive species appeared in fair quantity this year, and was seen with pleasure by several of our members.—R. L. SMITH. "This is var. *brevisetum* Godr."—HOWARTH.

Phalaris paradoxa L., var. *praemorsa* Coss. & Dur. Waste land, Newport, Isle of Wight. Occurred in plenty in 1917, and lasted several years, July 1917.—J. W. LONG. "Correct."—HOWARTH.

Phleum pratense L., var. *nodosum* (L.). Great Orme's Head, altitude 300 ft. on scar limestone, July 30, 1930.—A. WILSON. "Correct."—HOWARTH.

Ammophila baltica Link. Sand dunes north of Yarmouth, E. Norfolk, June 26, 1926.—J. W. WHITE.

Polypogon monspeliensis (L.) Desf. Bristol, July 1886.—J. W. WHITE. "Correct."—HOWARTH.

Mibora verna Beauv. St Aubins Bay, Jersey, April 8, 1910.—J. W. WHITE.

Agrostis alba L., var. Sea Banks, Castle Eden, Co. Durham, August 29, 1930.—R. J. BURDON. "Probably only a form."—HOWARTH.

Apera Spica-Venti Beauv. Waste ground, Newport, Isle of Wight, July 1930.—J. W. LONG. "Correct."—HOWARTH.

Holcus ——. One large patch on Wimbledon Common, Surrey, July 10, 1930. I suppose just a broad-leaved form of *H. mollis* L.—H. J. RIDDELSDELL. "Scarcely, I think, more than a f. *luxurians* (in all parts) due to soil. . . . No varieties can I trace in this direction."—BARTON. "A normal form of *H. mollis* grew close by."—BARTON and RIDDELSDELL. "My specimen is without the underground parts, but is clearly *H. mollis* L."—DRABBLE. "*Holcus mollis*."—HOWARTH.

Cynosurus echinatus L. Sandy waste, St Helens, Isle of Wight, July 1930.—J. W. LONG.

Catabrosa aquatica Beauv. By ditch near Watermeads, Mitcham, Surrey, June 14, 1930.—J. E. LOUSLEY.

Eragrostis Eragrostis (L.) Dr. Splott, Cardiff, Glamorgan, September 10, 1930. Quantities of this species (a grain alien) appeared this year, forming patches a couple of feet across, with the plants quite prostrate on the ground.—R. L. SMITH. "Correct."—HOWARTH.

Sphenopus divaricatus (Gouan) Reichb. Guernsey; coll. Lady DAVY, July 1930, ex G. C. DRUCE. "Yes, but I should name it *Festuca expansa* Kunth, reserving the name *Sphenopus* for a section of the genus *Festuca* in the same way as *Vulpia*, *Scleropoa*, etc."—HOWARTH.

Festuca rubra L., var. *barbata* Hackel. Stone Point, Walton-on-Naze, N. Essex, June 29, 1930.—G. C. BROWN. "Is the var. *genuina*, sub-var. *barbata* Hack; and the var. *dumetorum* Howarth."—HOWARTH.

Bromus britannicus I. A. Williams. Origin near Lymington, Hants, August 1930. Sown, August 18, 1929; taken, June 24, 1930. A: In dry sand, full sun; B: in sandy peat, full sun; C: in sandy peat, shade.—L. B. HALL. "It might be possible to test this genetically and cytologically, and compare it with authentic *Bromus hordeaceus* L., and with *B. molliformis* Lloyd."—HOWARTH.

Brachypodium pinnatum Beauv. Clipsham, Rutland, July 1930.—F. A. SOWTER. "My specimen is var. *pubescens* S. F. Gray."—DRABBLE. "Yes, *a vulgare* Koch."—HOWARTH. "These two varietal names appear to be synonymous, but *pubescens* is the earlier name."—EDITOR.

Lolium multiflorum Lam. [B.29.] Wheat-field near Chelsfield Station, W. Kent, July 12, 1930.—J. E. Lousley.

Agropyron junceum Beauv. [18-89.] Westmount, Jersey, August 4, 1929. This is the var. *genuinum* G. & G. (var. *microstachyum* Lange). I never saw in Jersey the var. *macrostachyum* G. & G.—Bro. Louis Arsene.

×*Agropyron junceum* × *repens* (*A. Hackelii* Druce = *A. acutum* auct.) [18-90a.] Maritime sands, all around the Island. Grève d'Azette, Jersey, August 4, 1929.—Bro. Louis Arsene. " Yes."—Druce.

×*Agropyron junceum* × *repens*. (*A. acutum*.) [18-90c.] Another form; perhaps *junceum* × *pungens*. Sands of the Quennvais, in dry places, with *A. Vaillantianum*. Jersey, July 6, 1928.—Bro. Louis Arsene. " Hackel rejected *acutum* for Britain."—Druce.

Agropyron repens L., var. *dumetorum* (Hoffm.) S. F. Gray. [18-93a.] Sandy borders of the Quennvais Pond, where it grows with vars. *Leer*-places, with *A. Vaillantianum*, Jersey, July 6, 1928.—Bro. Louis Arsene. " Yes."—Drabble. " Correct."—Howarth.

Agropyron repens L., var. *Leersianum* S. F. Gray. [18-94.] Wet borders of the Quennvais Pond, growing with vars. *dumetorum* and *lasiorachis*. Jersey, July 6, 1928.—Bro. Louis Arsene. " My sheet has two distinct varieties, (a) two spikes of *dumetorum* as above, and (b) one spike of *Vaillantianum*."—Howarth.

Agropyron repens L., var. *Vaillantianum* (Schreb.) Schrank. [18-95a.] Sands of the Quennvais, growing in dry places with *A. acutum* [18-90c.] Jersey, July 6, 1928.—Bro. Louis Arsene. " Correct."—Howarth.

Agropyron repens L., var. *Vaillantianum* (Schreb.) Schrank. [18-95b.] A form growing on the sands of Grève d'Azette with *A. junceum* and *A. acutum*. Jersey, August 4, 1929.—Bro. Louis Arsene. " Correct."—Howarth.

Agropyron repens L., var. *Vaillantianum* (Schreb.) Schrank. [18-95f.] A form with leaves distinctly bluish, especially in their upper part. Grows with *A. junceum* on the maritime sands at Westmount, Jersey, August 4, 1929.—Bro. Louis Arsene. " Correct."—Howarth.

Agropyron repens L., var. *lasiorachis* Hack. [18-96.] Sandy borders of the Quennvais Pond. Plant glaucous, growing with vars. *dumetorum* and *Leersianum*. Jersey, July 6, 1928.—Bro. Louis-Arsene. " Yes."—Drabble. " Correct."—Howarth.

" All these varieties of *A. repens* require genetical and cytological investigation, and no satisfactory determinations can be made without this. We are, however, much indebted to Bro. Louis-

Arsene for bringing these grasses before us, and hope that it may result in stimulating their investigation."—W. O. HOWARTH.

Triticum triunciale (L.) Rasp. [482.] Burton-on-Trent, Staffs, August 1930.—G. C. DRUCE. "Not this species, but is *T. ventricosum* Ces., otherwise *Aegilops ventricosa* Tausch."—BRITTON. "This plant is *T. ventricosum* Ces."—HOWARTH and J. PERCIVAL.

Polystichum angulare Presl. Hort. The Wirral, Cheshire, May 1930.—C. WATERFALL.

Chara vulgaris L., var. *papillata* Wallr. Brackish dyke near Seasalter, Whitstable, E. Kent [no date on label].—J. E. LOUSLEY.

Chara aculeolata Kütz. Cors Bodeilio, Anglesey, June 25, 1930.—A. WILSON.

Plants received from Prof. S. F. BEATTIE, Lowell, Mass., U.S.A.:—*Myriophyllum tenellum* Big., *Fagus grandifolia* Ehrh., *Iris prismatica* Pursh, *Tsuga canadensis* (L.) Carr., *Rhexia virginica* L., *Ostrya virginiana* (Mx.) Koch, *Lycopus communis* Bickn., *Anemone quinquefolia* L., *Apocynum androsaemifolium* L., *Alisma subcordatum* Raf., *Apocynum cannabinum* L., *Aster Radula* Aiton, *A. multiflorus* Ait., *A. vimineus* Lam., var. *saxatilis* Fernald, *Agrimonia gryposepala* Wallr., *Chelone glabra* L., *Bidens trichosperma* (Mx.) Britt., *Circaea latifolia* Mill., *Cornus paniculata* L'Hérit.

Prof. Beattie writes:—"Of the species sent, *Alisma subcordatum*, *Anemone quinquefolia*, *Circaea latifolia*, and *Agrimonia gryposepala* may be of a little special interest, since opinion is divided as to whether they are or are not *A. Plantago-aquatica*, *Anemone nemorosa*, *C. lutetiana*, and *A. Eupatoria*. The best authorities regard them now as quite distinct, but it may be of interest to some to compare my specimens with the European parallels. *Lycopus communis* is one of the few species we have which are in the class of "segregates." Very little careful work has been done in this country, so far, upon critical species, though we have enough which ought to be studied. Of the others, *Rhexia virginica* is unusual, and rather far north of its usual range. *Aster vimineus*, var. *saxatilis*, is of interest because it is a form of the higher levels, occurring here as a wash-down from the mountains."

ADDITIONS AND CORRECTIONS.

Rep. Bot. Soc. and E.C., 1929, p. 31, p. 128. Mr J. E. Little points out that some confusion exists in these records. One species only is concerned, *Verbascum longifolium* DC. The identity of this has been reaffirmed by Dr W. B. Turrill.

Rep. B.E.C., 1929, p. 221, line 20. The name should read *Fumaria Vaillantii* Lois. Labels bearing this correction were sent to the Distributor.

Rep. B.E.C., 1929, pp. 223 and 229. In place of Lurgershall read Lurgashall.

Rep. B.E.C., 1929, p. 234. For Longmoor read Longmorn.

Distribution of 1929 but not appearing in the Report. "*Viola ruralis* Jord. [A.2.] Chalky field above Goring, Oxon, June 8, 1929. Leg. J. E. LOUSLEY." Dr Drabble has noted Mr J. E. Little's sheet of this gathering as "imperfect and scrappy *V. Deseglisei*."

Distribution of 1928, but not appearing in the Report. "*Veronica persica* Poir., var. *Corrensiana* (Lehm.). [3463.] Hook, Surrey, October 21, 1928.—C. E. BRITTON."

REPORT, 1930.

P. 280.—676/2. Read "A variety with yellow seeds and veins of the corolla darker orange," etc.

P. 285.—Line 22. Read "south-east" in place of "north-east."

P. 372.—718. Read "*Juncus macer* S. F. Gray (*bicornis* Michx.)." Also in last line of paragraph read "*macer*" in place of "*bicornis*."

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BRIT. MUS.
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The year 1931 was, all things considered, one of the most disastrous years known in Britain. The Rake's Progress was arrested, it is true, but not until after Britain had been brought down to an unbelievably low scale in commercial and industrial prosperity. The weather was disastrous and did much to accentuate the position—day after day of sunless or wet days added to the prevailing gloom. The calamitous conditions seemed to have little affected economists and pseudo-philanthropists, who seemed as fertile as ever in suggesting methods of evading the consequences of their own actions, only none of their suggestions were worthy of consideration. Our chief industry has been brought to its knees, and a succession of badly cultivated or empty fields shows the tracks of the Rake's Progress, but not of the plough and harrow.

My own existence for six months was precarious, angina, chronic bronchitis and renal mischief having me in their bonds, so that I was for six months confined to my house. My excellent doctors pulled me through, though sadly maimed. This enforced rest was utilised in taking the *Comital Flora* through the press, and I trust that members will find it useful.

The year witnessed the completion of our late respected and beloved member's (Mr C. E. Salmon's) *Flora of Surrey*, which he did not live to see completed. It passed through the hands of W. H. Beeby, Arthur Bennett, C. E. Salmon, and was eventually completed by Mr W. H. Pearsall. Mr W. T. Boydon-Ridge has also issued his *Flora of North Staffordshire*; now we want to see him complete a Flora of the whole county.

Lt.-Col. A. H. Wolley-Dod has promised to complete a Flora of Sussex, and our own experience of him is that what he undertakes he loses no time in performing, so it may not be long before one of the richest, if not the richest county, has a Flora worthy of its riches and of its history. It is to be hoped too that Mr A. R. Horwood will soon have his Flora of Leicestershire and Rutland ready. We regret to see that but small support has been given to Colonel Godfery for the publication of his work on the British Orchids. Members should make an effort to purchase this book for it will rank side by side with George Maw's "Genus Crocus."

My own botanising commenced on May 24th, the first day I was allowed a journey by car, when I went to Goring to see *Orchis Simia* in good flower and quantity on a gloriously hot day. A few days later I went to Stoke Goldington in Northamptonshire to see the Lily-of-the-Valley, and was distressed to find that it had suffered badly from the ravages of tourists, we being able to find only one flowering spike. In early June I stayed with the Hon. Mrs Guy Baring at Forbury, and she showed me on the Downs at Faccombe clumps of *Cytisus scoparius* twelve feet high—a magnificent spectacle. At Bucklebury we saw *Myosotis versicolor*, var. *Balbisiana*, which is not rare in South Berks, and *Cerastium erectum*. Miss A. M. Neild kindly directed us to a nice clump of *Scrophularia vernalis* on Bucklebury Common, and here, too, a new locality for the county, was *Capnoides* (*Corydalis*) *claviculata*. At Vernham's

Dean, N. Hants, we were able to add *Poa Chaixii* to the county, although it has probably been introduced there with Cherry Laurels. *Bromus interruptus*, of which little has been seen for some years, has occurred in several places, and we got it on the county border of Oxon near Taynton. At Loudwater, Bucks, when my Secretary went to find *Dentaria*, which grows in the woods nearby, I waited in the car and got talking to a small boy. He told me he collected postage-stamps, and I promised I would send him some. A few days afterwards I received a letter from him—an example of neatness—thanking me for the stamps, and saying that a schoolfellow had gathered a specimen of the Lizard Orchis on the border of a wood close to Loudwater. We immediately went over and I was given the specimen—the second *Orchis hircina* from Bucks. On one of these journeys we gathered on Dashwood Hill, Bucks, the beautiful Caucasian Poppy, *Papaver umbrosum* Hort, which, however, may have been intentionally sown there. In the middle of June, on the Berkshire Downs at Ashdown, there was a great quantity of a new form of *Valeriana officinalis* which I have named *dentatifolia*. The close inflorescences were deep rose-pink coloured and were in character nearly a half-way house between *officinalis* and *sambucifolia*. *Ophrys Trollii* again appeared in good condition at Pool Bottom, Oxon, growing with typical *apifera*, and no intermediates were observed. At Compton Wood, Berks, *Orchis Fuchsii* grew to a height of over three feet. *Ornithogalum pyrenaicum* was also noticed. On Greenham Common we failed to find *Campanula persicifolia*, but were rewarded with the magnificent blossoming of *Rubus Rogersii*, and a new hybrid, *R. corylifolius*, var. *sublustris* × *polyanthemus*, which Mr Watson has not seen before, was also gathered here. In late June we motored to Ledbury and found Mr Bickham and his wonderful garden in excellent trim. By the Wye at Erwood, *Allium Schoenoprasum* was in abundance, and at Crickhowell we noticed *Ulmus Plotii*. On Minchinhampton Common, Gloster, we found the hybrid Thyme, ×*T. Lansdowneiae*.

An Umbellifer sent to me in 1930 by the Rev. W. Wright Mason from Rock, Cornwall, was named by a critic, to whom I had sent the plant for examination, as the alien, *Cnidium*, but the specimens were very inadequate. So I thought it would be well to search the locality, the exact place being kindly given me by the finder. Also, our member, Mr Bolton King, had been to Budleigh Salterton early in the Spring and sent me from there immature specimens of a *Scirpus*. One could not identify them, being so young, but they suggested *S. triqueter* or *S. americanus*, neither known from that area. With these two objects in mind we left Oxford in the first week of July, going via Bristol. There we were delayed by a heavy thunderstorm, but managed to reach Wells that night. The next day, in drenching rain, we left Wells and went through Taunton to Uffculme, where we enjoyed the hospitality of our member, Dr Laidlaw, and his wife, thence to see Mr D'Urban at Countess Wear with his beautiful wooded grounds, Dr Vines at Exmouth, and to sleep at Budleigh Salterton. Next day, with Major Orme, we searched the marshy ditches for the *Scirpus*, but in vain; only *S. mari-*

timus, in various forms, was seen. *Mathiola incana* is naturalised on the sea-cliffs, as is *Senecio Cineraria* and its hybrid with *Jacobaea*, and the Chicory-blue flowered *Malva sylvestris* which we also noted at Marazion, Hayle and Newquay, Cornwall. *Impatiens glandulifera* is naturalised in wet places. Major Orme kindly took us to the headland where *Campanula persicifolia* appears to be a native, and showed us the New Zealand adventive, *Acaena anserinifolia* Dr., well naturalised.

Leaving Budleigh Salterton we motored through Exeter, Okehampton and Launceston, where there are good examples of the Cornish Elm (*U. minor* Miller), to Rock, the locality of "*Cnidium*." It proved to be only a form of *Carum Petroselinum*. Here we found *Rosa rugosa* and *Tamarix gallica* naturalised on the dunes. We made a search at the classic place near Wadebridge for *Ranunculus tripartitus* without success, for the place had dried up. We slept at Newquay and saw Dr Vigurs, whose name is always connected in one's mind with *Fumaria occidentalis*, although he was not its first discoverer in Cornwall. We were glad to see it in several places about Newquay. On a waste place outside the town the beautiful Chilian *Oxalis rosea* was naturalised. Hayle still continues very rich in its adventives, which originally came in with mule provender during the war. Permanently naturalised here are *Anchusa azurea*, *A. officinalis*, *Verbascum Lychnitis*, *Sagina subulata* and *Salvia verticillata*, which now makes a brave show, but the choice plant is *Ajuga genevensis*, of which over a hundred fruiting specimens were seen. Native plants we found here include a rare variety, *grata*, of *Mentha gentilis*, which has only been noticed before from Westmorland, *Bursa laevigata*, several varieties of *Centaurium* and *Viola agrestis*. On the newly made-up road margins near Marazion *Papaver hybridum* and *P. somniferum* grew. The Land's End was visited, but the wretched weather drove us to Housel Bay, where we were literally imprisoned for two days on account of the heavy rain. On the steep roadside near Ruan Minor, *Trifolium Bocconei* was this year in luxuriant growth. Leaving the Lizard we went to Lostwithiel to see Mr Thurston, having tea on our way at Fowey with Mr Allchin and Sir Arthur Quiller-Couch. At Pentewan there were quantities of the hybrid *Mentha niliaca* (Jacq.). At Slapton we were too early for *Corrigiola* but we found a *Euphrasia*, which to me had much of the aspect of *salisburgensis*, and to this Mr Pearsall and Dr Drabble refer it. It is an interesting addition to the flora of southern Britain. Our next drive took us to Berry Head, where *Geranium Robertianum*, var. *hispidum*, was plentiful. *Orobanche amethystina* and the hybrid Thyme, ×*T. Lansdowneiae*, were also gathered. Driving through Torquay and Exeter we stayed at Barnstaple, and from here worked Woody Bay to be again disappointed in not finding *Cucubalus*. The plants we gathered here include *Sedum Forsterianum*, *Saxifraga umbrosa*, *Cotoneaster microphylla*, and a form of *Teucrium Scorodonia* with very large thin leaves and cleistogamous flowers. On waste ground near Bideford, *Iberis umbellata*, *Calceolaria scabiosifolia*, *Delphinium Ajacis* and *Veronica lobelioides* grew. At Ilfracombe we were fortunate enough to meet with a beautiful and distinct-looking *Rubus* which Mr Watson names as a new species, *R. crudelis.* Braunton Burrows were conspicuous for the most profuse flowering of *Helleborine palustris*—in countless thousands. Quantities of *Equisetum palustre* (var. nov. *simulans* Dr.) mimicking *variegatum*, and many forms of *Centaurium* were features. *Teucrium Scordium* was not flowering quite so freely, or I was too early for it. Coming from Barnstaple to Oxford in the day, we broke our journey at Potterne to see the treasures of Mr Marsden-Jones's experimental gardens, where much valuable work is being done in testing the constancy of " forms " of our British flora.

Miss Vera Smith, whilst looking for Orchids in a wood near Peppard, found an Orchid-like plant, which was unknown to her, growing in the trunk of a decayed tree. It was identified for her by the house-surgeon at Peppard Sanatorium as *Epipogium*, and was immediately sent to the Reading Natural History Museum, where it is preserved in spirit—a large plant with four flowers. I was taken to the locality by Miss Smith. It is about five miles from the wood in which it was last seen in Oxfordshire but, as is usual with this plant, it was growing solitarily and no more were to be found. It is a very interesting discovery and gives rise to one's hopes that it may well be found in any of the woods in that area.

In early August we went to Bagshot to see *Erica vagans* quite naturalised, the locality of which was kindly given me by Major Orme, its discoverer there, and to Burnham Beeches to see *Juncus macer* and *Lythrum hyssopifolia* near Farnham Royal, both discovered by Mr Basden, the latter plant not having been found in the county for fifty years.

On August 6th we took the night train from Rugby, reaching Pitlochry at about seven next morning. There we were met by Mr Corstorphine, who motored us to Inverness the same night. Stopping at Killiecrankie on our way, we failed to find *Lathyrus niger*, which now seems to be an extinct Scottish plant.

At Dalnaspidal we gathered *Thymus Drucei* and *Taraxacum faeroense.* At Inverness, following Mrs Wedgwood's directions, we saw *Pyrus latifolia* and *P. intermedia* by the Ness. Going on by Beauly to Kinlochewe, we gathered at Strath Orrin *Rhamnus Frangula*, a rare plant in the north, *Gentiana campestris*, and *Mentha aquatica*, var. *major* Sole. All our repeated searches for *Eriophorum alpinum* were unsuccessful—it was too late in the season. *Malaxis* and *Pinguicula lusitanica* were abundant, so too were *Scirpus pauciflorus* and *caespitosus*, and *Carex limosus* sparingly. On the lower slopes of Ben Eay we found *Schoenus nigricans*, *Carex Sadleri*, and a handsome Hawkweed which Dr Zahn names *H. triviale* Nörrl. Driving one glorious afternoon through Flowerdale to Gairloch, and back—a drive which I place among the most beautiful in Britain—we gathered *Sparganium angustifolium.*

From Kinlochewe, where *Spiraea Douglasii* is planted near fences, we motored by Dingwall and Bonar Bridge to Golspie, and near the Mound a splendid lot of *Moneses* in flower, with small plants of *Caltha* *radicans*, were seen. On waste ground at Golspie, *Bursa turoniensis* was gathered. Leaving Mr Corstorphine at Golspie we continued by train to Thurso, whence we went with the Hon. Mrs Guy Baring and party as her guests to Rysa Lodge, Hoy, having to tranship into a small motor-boat in the midst of the stormy Pentland. Rysa is a delightful Lodge which, during the war, was the Headquarters of the Admiral commanding Scapa Flow, over which, from the Lodge, one has a splendid view. It is situated only two miles from Lyness, where are the salvage works for raising the sunken German Warships. The oatfields in places are a magnificent purple with masses of *Viola Lejeunei*, and with it *Spergula sativa*, whose valerianaceous odour is very powerful on warm dewy evenings, but of these we had practically none. For nearly six weeks there had been little or no rain, and the cold winds, with a temperature only a little over 50°, had a bad effect upon the vegetation, which withered up under its influence. Other cornfield weeds were *Gnaphalium uliginosum* and *Chrysanthemum segetum*. Naturalised near the Lodge was *Mentha spicata*, and nearby at Melsetter, *M. longifolia*, which is used as a culinary mint. *Euphrasia borealis* was abundant and beautiful in the pastures. At Lyness Miss Olivia Baring found *Centaurea Cyanus* now a diminishing and rare species, and *Lychnis Githago*. Here, too, was a very large flowered *Vicia sativa* and forms of *Galeopsis Tetrahit*. At the mouth of Mill Burn, the Hon. Mrs Baring discovered a clump of the Magellan *Senecio Smithii*, obviously introduced with seed. At Melsetter the bay was fringed with a coppice growth containing two forms of *Ulmus montana*, *Pyrus intermedia*, *Salix purpurea*, etc., mostly, if not all, planted. The roadside was bordered with large *Alchemilla alpestris* and its var. *vegeta*, and *A. pratensis* as a new form—forma *truncata* Jaquet. Along the way to Aith Head *Silene maritima* in great variety was seen, and on the headland itself beautiful *Primula scotica* and *Ligusticum scoticum* were shown to us by Col. H. H. Johnston. About Melsetter *Impatiens glandulifera* has become naturalised. At the mouth of Pegal Burn, *Drosera anglica*, *Listera cordata* and *Sagina subulata* grew, while several unique Hieracia, discovered by Col. Johnston and his young friend, Mr James Sinclair, are to be found round the cliffs of Pegal Bay. The Dwarfie Stone was visited more than once and the Ward Hill and the Knap of Trowieglen, which afforded *Loiseleuria*, were climbed by the Hon. Mrs Baring and the younger members of the party.

Arctostaphylos alpina is abundant on the Ward Hill, with *A. Uva-Ursi*, var. *angustifolia*, conspicuous on its lower slopes. The picturesque bay of Rackwick afforded *Radiola* in plenty, *Carex incurva* and *lepidocarpa*. Colonel Johnston came with us on several expeditions and either showed or directed us to the localities of the rarer plants. His Orkney herbarium is probably the most complete in existence of that or any area.

We paid several visits to the mainland adding a new adventive to the Orkney Flora at Maeshowe—*Caucalis latifolia*, and noticing also *Viola canina* × *Riviniana* and *Bursa abscissa*. A long motor-boat journey was made to South Ronaldshay on a none too calm sea in order to see *Pneumaria* (*Mertensia*), which was abundant and beautiful around a little sandy bay. Splendid *Arctium nemorosum* was frequent and a dunal form of *Ranunculus Friesianus* was gathered.

Leaving Stromness on September 10th, our homeward journey was from Thurso to Inverness, thence to Edinburgh and Thirsk, where we were the guests for a few days of Mr and Mrs Foggitt. Little did we then think of the very severe illness which our valued member had to undergo and from which, thank God, he has emerged safely. On the whole the results of our visit to the north were meagre. Severe handicaps in the shape of weather, and illness personally, curtailed one's work materially.

In September I was at the British Association Meeting hearing General Smuts' Presidential address. I was present at the Royal Society's Soirée, also at that given in the Guild Hall by the City of London and by the Government in the Natural History Museum, Cromwell Road.

Mr W. D. Miller, whose illness we so greatly deplore, came to Oxford in October and discovered *Euphorbia platyphyllos* in Oxon, a plant which I had never seen in the county. We visited the spot to which he kindly directed us and after a long search were able to find one plant. It was pleasing, too, to see the re-occurrence of *Stachys germanica* in one of its old haunts after an absence of over twenty years. The seeds in a thick undergrowth must have been dormant during that time and, when the growth was cut down two years ago, the light and air induced them to germinate. The plant, being a biennial, flowered for the first time last year in some quantity and luxuriance, being quite four feet high in a few cases.

Miss Leake found a new habitat for *Cirsium tuberosum* near Rowde, N. Wilts. Taken there by Miss Leake and the Misses Bartholomew we saw it growing in large quantity, with a few heads still in flower, although it was as late as October 17th.

To the authorities of the Royal Botanic Gardens at Kew and Edinburgh, and of the Natural History Museum at Cromwell Road, we are indebted for help. Among foreign botanists we are grateful to Prof. O. E. Schulz for naming the Cruciferae, Dr Ronniger the Thymes, Dr Almquist the Shepherd's Purses, Dr P. Aellen the Chenopods, Dr R. Danser the Polygonaceae, Dr Dahlstedt the Dandelions, Dr F. Jaquet the Alchemillas, Dr Probst the Adventives, Dr K. Zahn the Hawkweeds, Dr H. Schinz the Adventives, Dr Kükenthal the Carices, and Prof. J. Holmboe.

To Dr S. Howard Vines, F.R.S., the Rev. F. Bennett, Mr T. Gambier-Perry, and Mr R. H. Corstorphine we are indebted for literary help; and for critical examinations of British species we are very grateful for the kindness shown by Mr J. Fraser, Dr E. Drabble, Mr C. E. Britton, Mr W. H. Pearsall, Col. A. H. Wolley-Dod, Mr W. Watson, Mr D. Lumb, Mr A. E. Wade, Mr R. W. Butcher, Mr I. A. Williams, Mr W. O. Howarth, Mr J. E. Little, and Mr P. M. Hall.

The outstanding event since the foregoing Introduction was written by our esteemed Secretary, Dr G. Claridge Druce, was his passing, on 29th February 1932, after nearly 30 years' continuous and strenuous service on behalf of the Society. Generous tributes to the value and extent of his scientific work and to the varied services he rendered in other directions appeared in the press at the time, and a more detailed account of these may be found in the separate obituary notice in this Report. To the writer it will always be a pleasing recollection that Dr Druce was full of gratitude both to Mr John Chapple and himself for their efforts to lighten the load of his last years and was spared any anxiety as to the carrying on of the work of the Society.

A meeting of the Advisory Committee he had appointed to act in case of necessity was held on March 15th at Burlington House, Piccadilly —by kind permission of the Linnean Society—and the whole position was reviewed. It was unanimously agreed to convene a General Meeting of the members of the Society for May 9th, for the consideration of the following recommendations:—

1. That the aim of the Society shall be to continue its work broadly on the lines laid down by the late Dr G. C. Druce.
   (Suggestions for increasing its scope or value to be considered later.)
2. That the Society be organised on a constitutional basis by the Election of Officers and Committee.
3. That the Treasurers be Mr and Mrs T. J. Foggitt, and the Secretary be Mr W. H. Pearsall.

The Linnean Society having generously placed a large room at our disposal, this meeting was duly held and the Rt. Hon. Harold T. Baker was voted to the chair. In proposing the adoption of recommendation No. 1, Mr Pearsall stated that in the opinion of the Advisory Committee their aim should continue to be "To study the characters and distribution of the Flowering Plants and Ferns of the British Isles, and to afford facilities for the adequate discussion of definite plants."

It might, perhaps, be well to say that No. 1 did not commit them to the adoption of any particular nomenclature. In this matter we shall—in common with all other British and Foreign botanists—conform to the rulings of the International Botanical Congress of 1930. This proposition was seconded by Mr T. B. Blow and carried *nem. con.* With regard to the question of increasing the value of the Society's work, many suggestions had been received and others would be welcomed. These would all be considered by the Committee at a later date, but the main business of the present meeting was to reconstitute the Society on a permanent basis and to provide the necessary machinery for carrying on its work.

Recommendation No. 2 was formally moved by Sir Roger Curtis, seconded by Mr P. M. Hall, and carried unanimously.

The Election of Officers (No. 3) was the next business. On the motion of Dr A. H. Evans, seconded by Miss E. Vachell, Mr and Mrs T. J.

Foggitt were unanimously elected Treasurers, and the Society is to be congratulated on their acceptance of the office.

Before proceeding to the Election of Secretary, Mr Pearsall said that while he very greatly appreciated the nomination of the late Dr Druce and the recommendation of the Advisory Committee, he desired to make it unequivocably clear that the meeting was perfectly free to elect whomsoever it chose. If another were elected he should not take umbrage nor diminish in any degree the work he had been doing for the Society. He then retired, and in his absence it was moved by Mr R. W. Butcher and seconded by Mr E. B. Bishop, "That Mr W. H. Pearsall be invited to become Secretary of the Society, and that he be given an adequate allowance to be determined by the Committee." This was carried unanimously.

Upon being informed of the decision of the meeting, Mr Pearsall cordially thanked the members for his election and assured them that he should spare no effort to justify the confidence they had reposed in him.

In proposing that Mr John Chapple be Assistant Secretary to the Society, Mr Pearsall paid high tribute to the strenuous and efficient services Mr Chapple had rendered to the Society both before and after the death of Dr Druce. This was duly seconded, and carried *nem. con.*

The Officers having been elected, the members proceeded to the Election of the General Committee.

It was resolved, "That the General Committee consist of 21 members—with power to co-opt." The Secretary intimated that the members of the Advisory Committee had willingly agreed to offer themselves for re-election to the General Committee, and wished to see every branch of systematic botanical study represented on the Committee. He had that morning received a suggestion from Mr H. A. Hyde—Keeper of the Department of Botany, National Museum of Wales—that a capable geneticist should be one of the members of the Committee and hoped the meeting would keep this in mind.

The following is a complete list of the Officers and Committee elected:—

General Committee (with power to co-opt).—J. Ramsbottom, O.B.E., M.A., F.L.S., and A. J. Wilmott, M.A. (Camb.), F.L.S., representing the British Museum (Natural History), South Kensington; J. S. L. Gilmour, B.A., F.L.S., and Dr W. B. Turrill, representing the Royal Botanic Gardens, Kew; Dr W. A. Sledge; R. W. Butcher, B.Sc., F.L.S.; A. E. Wade, F.L.S.; Dr E. Drabble; Lt.-Col. A. H. Wolley-Dod; C. E. Britton; Rt. Hon. Harold T. Baker; Hon. Mrs G. Baring; Sir Roger Curtis, Bart.; Lady Davy; Mr and Mrs T. J. Foggitt; Miss E. Vachell, F.L.S.; R. H. Corstorphine, B.Sc.; P. M. Hall; Mrs M. L. Wedgwood; W. Harrison Pearsall. Treasurers—Mr and Mrs T. J. Foggitt, Stoneybrough, Thirsk. Secretary—W. H. Pearsall, Matfield, Kent. Assistant Secretary—J. Chapple, Yardley Lodge, Oxford.

Under " Any other business," Mr A. J. Wilmott proposed " That in view of the opinion held by many field botanists, the Committee of the Botanical Society and Exchange Club be asked to explore the possibilities of an understanding being come to with the Watson Botanical Exchange Club by which matters of common interest could be discussed." This was carried, *nem. con.*

The meeting closed with cordial votes of thanks to the Chairman for presiding, and to the Linnean Society for their courtesy in again granting us the use of their room. So ended a memorable occasion marked by the utmost goodwill, the most pleasant renewal of former acquaintances, and the best of good wishes for the future success of our work. The Secretary desires to acknowledge with the deepest gratitude the valuable assistance he has received from botanists generally—without exception—and to assure members that any assistance he can render is always at their service.

Subscriptions should continue to be sent to the Assistant Secretary, Mr John Chapple, Yardley Lodge, 9 Crick Road, Oxford. Critical alien plants intended for submission to referees should be received by him before October 1st.

Exchange Club Parcels for 1932 should be sent on or before 1st December 1932, to Dr W. A. Sledge, Department of Botany, The University, Leeds.

British plants—or articles, papers, records or questions relating thereto—should be sent to the Secretary, Mr W. H. Pearsall, Green Gable, Matfield, Kent. He invites the collaboration of members in a list of " Amended Descriptions." Most field botanists have at times found existing book descriptions faulty or inadequate and their correction is much to be desired.

NEW MEMBERS.

Mr E. B. Basden; Mr P. G. Beak (1932); Mr Lewis A. W. Burder; Mr R. C. L. Burges, M.B.; Lady Alethea Buxton; The Botany Dept., Cambridge University; Mr J. Chapple; Mr E. S. Edees, M.A. (1932); Mrs A. Fraser (1932); The Rev. Hilderic Friend; The Director, Board of Greenkeeping Research; Sir Richard Gregory, Bart., D.Sc., LL.D.; Mr J. Donald Grose; Mr J. Jacob (1932); Miss P. A. Leake; Dr Andrew C. McCandlish; Mr Alex. Macgregor, M.A. (1932); Mr Latimer McInnes. Mr C. Pearson (1932); Mr G. Richardson (1932); Mrs M. M. St. Smith (1932); Miss E. M. Thomas (1932); Mr Edward Thompson (1932); Mr H. J. Wilkinson (Life-Member); Mr N. Woodhead, M.Sc.; City of York Public Library; Mr Edward Yuill.

BRIT. MUS. (N.H.)
BOTANY

GEORGE CLARIDGE DRUCE.

DOCTOR GEORGE CLARIDGE DRUCE.

The news of the passing of Dr Druce came as a great shock to all of us, although it was obvious during the preceding twelve months that his powers were rapidly failing. He soon became tired, there were frequent lapses of memory and he appeared to be losing confidence in his own judgment. Notwithstanding these evidences of weakness he showed great courage and went on with his work to the last. On Saturday morning, February 27, he had a sudden relapse and remained more or less in a state of coma until the end came on Monday, February 29. We are glad to think that he was spared another long and painful illness, and died—as he wished—"in harness." This is no mere form of words, for his latest publication, "The Comital Flora of the British Isles," was sent out from the Press during the same week, and only three days before his death he was in his accustomed place on the City Council.

He was born at Potter's Pury, Northamptonshire, on May 23, 1850, and spent the first five years of his life on the banks of the Ouse at Old Stratford. Death deprived him early of paternal care, and for a time he was placed in straitened circumstances. His love for flowers soon became apparent and his arm always bore a 2 inch scar caused by a hawthorn when gathering his first handful of *Geranium pratense*. Short visits were made to the parish of Woughton-on-the-Green, where, in attempting to gather a flower, he fell into the canal and received his botanical "baptism." Subsequently he went to Yardley Gobion, ten miles from Buckingham, where his limited education began, but the neighbouring woods opened out to him the fascinating study of entomology, and by the time he finally left school he had collected a very representative series of local lepidoptera.

Notwithstanding his love of nature, his desire was to become a chemist, and when he was fifteen years old, through the generosity of an aunt, he was duly apprenticed to that business in Northampton. He worked for twelve hours every week-day and on every third Sunday as well. This temporarily interfered with his field work, but he was enabled to learn enough Latin to pass his preliminary examination. Later, without tutorial assistance, he passed his first examination for a chemist, and subsequently his second examination with honours, receiving as a prize Sowerby's Plants of Britain, Carpenter's Microscope, and other books. At the end of his apprenticeship his employers gave him a £20 microscope which revealed to him beauties of nature hitherto hidden and unsuspected.

His Herbarium was started in 1873 as an aid to preparation for his pharmaceutical examination, and now contains nearly a quarter of a million plants. By the time he was 29 he had saved enough to buy a business of his own and, having once visited Oxford and the Thames valley in search of *Orchis militaris*, the county so attracted him that in

1879 he purchased a pharmacy in High Street, Oxford. His mother resided with him, and much of his subsequent success he attributed to her. Every moment that could be spared from an ever-increasing and varied business was devoted to the local flora.

Dr Druce was first elected to the Oxford City Council in November 1892. He became Sheriff of Oxford in 1897, and was elected Mayor in 1900. During his term of office as chief magistrate he was specially invited as the guest of the Lord Provost of Glasgow, on the occasion of the State visit of the Lord Mayor of London, to the Glasgow Exhibition. It also fell to his lot to announce the succession to the throne of King Edward VII., and with eight other members of the Corporation he went to St James' Palace to convey the congratulations of the City of Oxford to His Majesty. Of the fifty years he had lived in Oxford no fewer than forty were spent in continuous service on the City Council.

The University of Oxford conferred upon him the honorary degree of Master of Arts in 1886. Subsequently he received by decree the degree of D.Sc. from Oxford and the honorary LL.D. from St Andrews. In 1927 he was elected F.R.S., a distinction not often conferred on men with no academic training.

His world-wide fame as a botanist is common knowledge, but, perhaps, his greatness as a man is less generally realised. There are many who, from personal experience, can gladly endorse the testimony of an old friend (given in the "Times" of 5th March) that "in addition to his great intellect and marvellous memory he had one of the most lovable, grateful, generous, unselfish and unassuming characters." His kindness to others—even to beginners and strangers—was, indeed, exceptional, and he spared no effort to help any who needed his assistance. His unbounded enthusiasm for the study of plants and his tireless energy in their quest were very infectious, and it was not only a great joy but a liberal education to botanise in his company. He was always full of gratitude for any small and kindly office paid to himself and there was a peculiar charm in the grace of his expressed appreciation of it.

We cannot more aptly conclude this brief note than by quoting from the address given at the funeral of Dr Druce by the Rev. W. Mansell Merry, M.A.:—"Again and again it has fallen to most of us to mourn in this place the passing of those who by virtue of high character and distinguished usefulness in the councils of this City have merited well enough the last tribute accorded to their memory by their colleagues who survive them. But there is a certain uniqueness attaching to the present occasion which derives inevitably from the uniqueness of the man himself. No matter from what angle one may look back over the long career of Dr Druce: no matter by what criterion one may examine and appraise its story, there is no denying the fact that throughout its course and in every relation, it was that of an exceptional man; exceptional in personality, in vision, in intellectual endowment, in insatiable passionateness of interest, in heroic independence of circumstance, in manifold and outstanding achievement. '*Nihil tetigit quod non ornavit*'—'he left everything he touched the better for the contact.'

One may well quote that phrase as a true summing up of the signal success which marked Dr Druce's practical relationship with all that a busy life held for him of duty and of effort. Unique, again, surely, in such a connection as this was his unspoilable simplicity of heart. There are very few literally 'self-made' men who do not carry about with them signs—to old friends and to new acquaintances, distressing signs—of a felt superiority. They have fought and issued triumphant, where others fell. But their victory has cost them morally more than they can afford. My brethren, Oxford is vastly poorer to-day for the loss from its midst of one who, in spite of all the honours heaped upon him; in spite of the reputation gained by him in the scientific circles of the world, remained at the end of his days just the same man in unaffected, unselfconscious modesty of spirit as he was when I first knew him at the beginning of his work in this City some half-century ago. Thus he passes from us, 'full of years and of cares and of neither weary'; a generous and patriotic citizen; a profound and tireless student of Nature; respected and admired by all who knew him; to his intimates 'a man greatly beloved,' a sincere and humble Christian gentleman."

PLANT NOTES, ETC., FOR 1931.

(Mostly Plants New to the British Isles or Notes on British Species inserted here for Convenience of Reference.)

ABBREVIATIONS.—† before a name signifies the plant is not native; × = a hybrid; ± more or less; ! after a locality, that the Secretary has seen the plant there; [ ] that the plant is not British or the record is doubtful; *Ann. Bot.* = *Annals of Botany; Bot. Abstr.* = *Botanical Abstracts*; *Gard. Chron.* = *Gardeners' Chronicle*; *Ir. Nat.* = *Irish Naturalist*; *Journ. Bot.* or *J. of B.* = *Journal of Botany*; *Nat.* = *The Naturalist*; *N.W. Nat.* = *North Western Naturalist*; *Ph. Journ.* = *Journal of the Pharmaceutical Society.*

†21/2(2). PAPAVER UMBROSUM Hort. See *Gardeners' Chronicle* (1876), ii., 16; xxii., 49 (1884), fig., and Nicholson's *Illust. Dict. of Gardening*, Div. v., p. 21. Alien, Caucasus. A beautiful, dazzling, dark red-flowered species with a black blotch at the base of each petal, the blotch often fringed with an ash-grey border. Appressed hairs on the upper part of the stems. Growing in some quantity (? intentionally sown) on newly turned ground made in road alterations at Dashwood Hill, Bucks. Specimens are distributed this year. G. C. DRUCE.

39/5. CARDAMINE HIRSUTA L., var. EXIGUA O. E. Schulz (teste Schulz). Binevenagh Cliffs, Co. Londonderry, September 1924, C. G. TRAPNELL.

44/2. EROPHILA BOERHAAVII (Van Hall) Dumortier, var. FRASERI O. E. Schulz, nov. var. Scapi usque ad inflorescentiae axim (incl.) pilosi, pedicelli pilosuli. Entspricht der var. *obconica* (De Bary) O. E. Schulz von *E. verna*. Sawley, near Clitheroe, N.W. Yorks, April 1924, C. G. TRAPNELL. Strictly speaking, this has no connection with our expert, Mr J. Fraser.

45/2. COCHLEARIA OFFICINALIS L. This is a variable plant on mountains, up which it extends to 3000 feet. On Loch an Larige, M. Perth, a form with smaller and less angled leaves occurred, on which Prof. O. E. Schulz says, "*C. officinalis* L., ad *C. groenlandicam* L. spectans." A similar form from Kentmine, Westmorland.

†52/2. CAMELINA ALYSSUM (Mill.) Thell., var. (forma) BRACHYCARPA (Thell.) (teste Schulz). Alien, Welwyn, Herts, 1930, H. PHILLIPS.

54/2. BRASSICA NAPUS L., var. SYNTOMOCARPA O. E. Schulz (teste Schulz). Launcells, E. Cornwall, 1930, Rev. W. W. MASON.

54/14. B. ARVENSIS Kuntze, var. MEDIA Acloque (teste Schulz). Cliffs, Kingsdown, E. Kent, 1879, CASTALIA, COUNTESS OF GRANVILLE.

Var. ORIENTALIS (L.) Koch et Zig., sub-var. STRICTA Celak. (teste Schulz). Holmbury, Surrey, 1882, CASTALIA, COUNTESS OF GRANVILLE.

54/15. B. ALBA (L.) Boiss., var. PHAEOSPERMA Finlayson, nov. var. Differs from the type by having brown-skinned seeds. Found among seeds of the typical plant at Cambridge by R. C. FINLAYSON.

54/22. B. INCANA (L.) F. Schultz, forma GLABRESCENS (Cosson) O. E. Schulz = HIRSCHFELDIA INCANA (L.) Lagreze-Fossat. Burton-on-Trent, Staffs, 1930, G. C. DRUCE. Det. O. E. SCHULZ.

55/2. DIPLOTAXIS MURALIS (L.) DC., var. INTERMEDIA Schur Enum. Pl. Transsilv., p. 60. Plant tall, much branched, large leaved and large flowered, and the pedicels often much longer than the flowers. Waste ground by Bampton Railway Station, Oxon, 1931, P. G. BEAK. Det. E. DRABBLE.

†56/2. ERUCA ERUCA (L.) Dr., var. ERIOCARPA (Boiss.) (teste O. E. Schulz). Burton-on-Trent, Staffs, 1929, G. C. DRUCE.

59/25(2). BURSA SUBLAEVIGATA (E. At.). A handsome form with regularly cut leaves, Letchworth gravel pit, Herts; Yarmouth, E. Norfolk, 1931, H. PHILLIPS. Det. E. ALMQUIST.

†61/27(2). LEPIDIUM LASIOCARPUM Nuttall, sub-sp. GEORGINUM (Rydb.) Thell. Burton-on-Trent, Staffs, 1930, G. C. DRUCE. Det. O. E. SCHULZ.

†76/3. RAPISTRUM RUGOSUM (L.) All., var. VENOSUM (Pers.) DC. (teste Schulz). Annual. Lower leaves small, slightly cut, apex subobtuse, the upper joint majore venoso rugoso, rugis sinuatis et sulcis profundis. Alien, Burton-on-Trent, Staffs, 1930, G. C. DRUCE.

†80/3. RAPHANUS LANDRA Moretti, forma PARVIFLORUS Murr. Burton-on-Trent, Staffs, 1930, G. C. DRUCE. Det. O. E. SCHULZ.

†88/13(3). VIOLA BIFLORA L. Alien, Pyren., Delph., Juras, Helv., Ital. bor., Dalm., Monten., Croat., Transs., Serb., Bosn., Hung., Austr., Germ., Scand., Sibir., India, Kamptschatka, America, etc. Damp places about springs in mountain ranges. A pretty, small, bright, yellow-flowered plant with brown lines. This ought to be found in Yorkshire, etc., but we have no evidence of it in Britain except as an alien. Found growing on damp soil among Goutweed near Sutton, Pulborough, W. Sussex, 1931, by a child, ex S. E. PARSONS.

†96/20(2). SILENE CORDIFOLIA All. Alien. Alpine and sub-alpine regions of the French and Italian Maritime Alps. Perennial. A rose-coloured form of the species. Hortal, waste-heap, Welwyn, Herts, 1931, H. PHILLIPS. Det. J. FRASER.

100/5. CERASTIUM VULGATUM L., var. PRATENSE Rouy Fl. Fr., iii., 207. Native. Plentiful on Coombe Hill, Berks, 900 ft., 1931, G. C. DRUCE.

117/2. MALVA SYLVESTRIS L., var. vel forma CAERULESCENS mihi. Growing with the type at Budleigh Salterton, S. Devon; Hayle and Newquay, W. Cornwall, 1931. It differs from the type by having in the fresh state a corolla of chicory-blue, but on drying the flowers become a darker purple, and it is difficult to believe that they could have been so light in colour. G. C. DRUCE.

†132/11. OXALIS ROSEA Jacq. Alien, Chile. Hortal. Waste ground near Newquay, W. Cornwall, 1931, G. C. DRUCE. A pretty and favoured garden species. Det. J. FRASER.

†147/3(2). GENISTA ELATIOR Koch Syn., ed. 2, 150. Truncis erectis, superne ramosis ramis aequaliter striatis, superne sub-angustatis inermibus glabris apicem versus pubescentibus. *G. elatior* Koch, l.c., 131 = *G. tinctoria* L., var. *elatior* (Koch) Schulz Hb. Norm. No. 633; Rouy Fl. France, iv., 235, 1897. *G. tinctoria* L., sub-sp. *elatior* Koch (teste Kew). [Ref. C.33.] Alien. Roadside, Orpington, W. Kent, July 1930, J. E. LOUSLEY.

151/2. ONONIS REPENS L., var. MARITIMA Gren. & Godr. Det. Dr SCHINZ. It grows on the extensive sand-dunes of Lady's Island Lake, Co. Wexford, 1928, G. C. DRUCE. This was named by M. Patrice Riencourt de Longpré *O. spinosa*, forma *mitis caduca*, var. *pseudo-arvensis* Rienc. Mr Horwood named it *oligophylla* Ten. of S. Italy and Sardinia.

154/3. MELILOTUS ARVENSIS Wallr., var. UNGUICULATA. Waste ground, Newport, Isle of Wight, August 1930, J. W. LONG. A similar monstrosity to the one which occurs in *M. alba* and *altissima*, *Medicago lupulina*, etc., G. C. DRUCE.

176/11. VICIA LAEVIGATA Sm. Eng. Bot., t. 483, 1798. V. LUTEA L., sub-sp. LAEVIGATA (Sm.) Syme E.B., iii., 94. "*V. hybrida* in pratis et pascuis circa Weymouth in agro Dorsetsiensi."—*Huds. Fl. Ang.*, ed. 2, 320, 1778, not of L. "Gathered on the beach at Weymouth by the Rev. Mr Baker in August 1792."—*Sm. Eng. Bot.*, n. 483. "Authentic specimens prove this to be Mr Hudson's *hybrida*."—*Sm. Eng. Fl.*, iii., 286. "About Weymouth, Portland Isle, Chesil Bank, etc."—*With. Nat. Arr.*, ed. 7, iii., 846, 1830. "Now extinct."—*Cyb. Brit.*, 319. "Ambiguity."—*Comp. Cyb.*, 500. "Portland Island, among the shingles near Chesil Bank and even flowering under the stones, some depth, Sir T. G. Cullum;

Lodmoor (specimen ex Pulteney in Hb. Brit. Mus. where the locality is more definitely given as ' a little beyond the turnpike gate near the sea shore ') near Weymouth."—*Huds. Bot. Guide*, 228, 1805. " I explored all the localities given in the Botanist's Guide and in the English Flora, a field half-way between Weymouth and Portland Ferry near the sea, without success."—G. S. Gibson in *Phyt.*, 737, 1843. " There is no dubiousness about the occurrence of this plant. A specimen exists in Herb. Smith in the Linnean Society and also in Herb. Banks. As to its grade there seems a possibility that it was a hybrid of *V. lutea* and *V. angustifolia* or a mutant. Close search along the coast may yet be successful in rediscovering it, a most desirable thing as it is unknown elsewhere."—G. C. Druce, The Extinct and Dubious Plants of Britain in *Suppl. Rep. B.E.C.* for 1919. Recently I have gathered on the rubbish-heaps of Burton-on-Trent, Staffs, a form of *V. lutea* with glabrous pods which Continental botanists have named var. *laevigata* Boissier, but this is, as Mr E. G. Baker agrees, a different plant, and not the much-to-be-desired *V. laevigata* Sm. Boissier (*Voy. Bot. Espr.*, 194) had a var. *laevigata* which he wrongly thought was Smith's plant. Leaves and pods completely glabrous, which is probably my Burton plant, and as such has been identified by M. Patrice Riencourt de Longpré and Dr H. Schinz.

176/9. V. LUTEA L., var. GLABRESCENS Druce, nov. comb. = var. LAEVIGATA Boiss., non Sm. The plant from Burton-on-Trent with glabrous leaves and pods was named var. *laevigata* Sm. by Riencourt and Schinz but Smith's plant had glabrous, five-seeded pods, calyx teeth more equal, flowers pale blue or whitish, seldom yellowish. The Burton plant has glabrous pods and foliage, stipules green, flowers pale yellowish, calyx with open sinus, some teeth longer than others; quite unlike the figure 483 in *Eng. Bot.* of *laevigata* Sm. Bentham's suggestion as to its being under *sativa* is wildly wrong. G. C. DRUCE.

178/3. LATHYRUS TUBEROSUS L. I first became acquainted with this plant some twenty years ago when some seeds were given me by the schoolmaster at Fyfield, Essex. These were sown in a pot of lightish soil, and in due course two or three germinated and subsequently produced tubers. At that time I was living at Hale End, near Chingford, Essex, and had a small bank in my garden (on the London Clay), which I called my chalk-down, as I made it mainly of chalk with a " subsoil " of chalk nodules for the purpose of growing calciphilous plants. I planted out the *Lathyrus* tubers on the bank, thinking they would probably prefer it to the stiff and sticky clay. They did. In the course of a year or two they grew so well that I used to place cylinders of 3 ft. galvanised netting round a clump of the shoots, and the latter would grow so vigorously that they overtopped the netting by about the end of July and had to be supported by another story of netting. The plants used to flower very well and for some months there were always some flowers open; but they did not seed as well as they flowered, possibly because the soil was not good enough for seeds. Their one drawback was the strong tendency of the shoots to come up all over the place in the spring, when they used to stand up straight out of the ground to the height of six or seven inches before collapsing with their own weight. When we moved to Cornwall in 1928 I delved for some of the tubers, and after going down a foot or eighteen inches in likely spots found four of various sizes, the largest being about two inches by one inch and the smallest about half the size each way. They were dark brown like those of *Conopodium majus*, which they much resembled in substance, but were roughly spindle shaped with one end decidedly the more pointed. The new shoots always came from the blunter end and sometimes penetrated a foot or two of earth before reaching the surface, the subterranean part of the shoot being white and suggesting the corresponding part of *Convolvulus arvensis*. The soil here is a stiffish yellow clayey loam. Two of the tubers were planted in what was thought to be a suitable spot and the three foot stump of a small holly tree was fixed between them and branches stuck in the ground firmly round it, the whole being tied with string to keep it together and provide suitable support for the shoots, some of which appeared in the spring of 1929 and duly flowered and seeded as well as could be expected. In 1930 there was an obvious deterioration, for only two shoots appeared and did not grow, flower, or seed so well as before. In 1931 nothing came up at all, and I conclude that either the hot dry season of 1929 or the soil or the rainfall was too much for their comfort and they gave up the struggle. I have now received some more tubers, all small, from Mr R. L. Smith, who recorded the plant's colony at Barry Dock (*Rep. B.E.C.*, 342, 1930), and intend to try again to establish the plant in the garden here. Although I lived in Essex for 26 years I never saw the plant at Fyfield, but I did see it, I think, in August 1916, flourishing in the grounds of the Hotels on Canvey Island, in what seemed to be nearly black alluvial soil.—C. NICHOLSON, Tresillian, Cornwall.

190/2. ALCHEMILLA PRATENSIS Schmidt, forma TRUNCATA Jaquet. Pitlochry, E. Perth, 1931, G. C. DRUCE.

Forma VEGETA Jaquet. A luxuriant state. Melsetter, Hoy, Orkney, 1931, G. C. DRUCE.

196/1. CRATAEGUS MONOGYNA Jacq., var. vel monstr. In this instance the well-formed haws retain their petals permanently until the fruits begin to change colour, so at a short distance it suggests that the plant is flowering. Torberry Hill, South Harting, W. Sussex, July 1931, E. B. BISHOP and W. BIDDISCOMBE. A most interesting state.

196/1. CRATAEGO-MESPILUS GRANDIFLORA (Smith) = CRATAEGUS MONOGYNA × MESPILUS GERMANICA. (MESPILUS SMITHII DC.; M. GRANDIFLORA Sm.; PYRUS LOBATA Nicholson). Foot of Cader Idris, Tal-y-llyn, Merioneth, v.-c. 48, August 1931, Miss IDA M. ROPER. It is a supposed hybrid between the above two named parents, and was first found in France. As the fruits are sterile it is always a planted tree in

Britain, and must be so in this case. I have seen many trees of it in S.E. Surrey, and elsewhere in gardens, etc.—J. Fraser.

256/1. Conopodium majus (Gouan) L. & B. Captain A. H. Batten Pooll sent me from Rode, N. Somerset, a curious form of this which is not represented in the Kew Herbarium. It is a fragile plant, the fruits having their edges turned in unlike the Orthospermae. In Stoke Wood, Mendips, S. Somerset, a form with similar fruits occurs, the nut in this case being the ordinary pig-nut of the common species. In Devon plants occur with similar fruits but with a tap-root four inches long.

265/3. Oenanthe crocata L., forma rosea Druce, forma nov. Found by Mr C. P. Hurst at Pillaton, E. Cornwall, 1931, G. C. Druce.

301/1. Valeriana officinalis L. In Britain this is a variable species but readily admits of being separated into two well marked forms. Linnaeus in the *Species Plantarum* had one species, *officinalis*, which in the main refers to the shop Valerian. Smith (*Eng. Fl.*, i., 43, 1824) also has one species, but with a subordinate variety, *V. sylvestris major montana* of Bauhin and Dillenius, which is often muddled by Smith as the type of Linnaeus. W. H. Beeby (*Journ. Bot.*, 314, 378, 1888) studied the British Valerians with some care and found he could readily separate them. Boswell Syme (*Eng. Bot.*, ed. 3, iv., 236, 1877) named them badly, since he chose *Mikanii* for the true *officinalis*, there being already a Guatemalan *V. Mikanei*. Syme defined the two varieties briefly as: *Mikanii*—rootstock with elongated stolons, leaves with 6-10 pairs of leaflets; *sambucifolia*—rootstock with elongated stolons, leaves with 4-6 pairs of leaflets. Gibson (*Fl. Essex*, 154, 1862) says the fruits differ, but was unable to see any constant differences; the true medicinal plant was acknowledged as true *officinalis*. Sir W. Hooker (*Student's Flora*, 190) quotes Syme's leaf-description, while Babington (*Manual*, 190, 1894) distinguishes *officinalis* and *sambucifolia*. F. N. Williams (*Prod. Fl. Brit.*, 202) keeps these distinct as two species—*officinalis* with two varieties, (i) *tenuifolia* Vahl; (ii) *latifolia* Vahl (which he says = *V. exaltata* Mill.)—the latter a stronger plant with suckers rather than stolons, leaflets much broader, and *sambucifolia*, leaflets 3-5 pairs, cymes large, diffuse (?), flowers often larger. Beeby says there is no great difference in size, but *officinalis* is of a beautiful bright clear green, like *Cardamine amara*, while *sambucifolia* is dark, opaque, bluish-green. *C. officinalis* is more divaricate—it has an almost scorpioid cyme when fruiting. In *sambucifolia* the cyme is more compact, while the branches are simply erect. The ripe fruit of *sambucifolia* is larger, considerably broader at the base, in proportion to the apex; the seed does not fill the cell cavity in *officinalis*. Arnold Lees (*Fl. N.W. Yorks*, 274) maintains that *V. officinalis* is a dry-soil state of the far commoner *V. sambucifolia*, but this seems unlikely. Beeby says that many of these woodland plants (but not *officinalis*) are states of *sambucifolia*. A difference noticed in the cultivation of the two species by Beeby is that *officinalis* has the lower leaves lying flat on the ground whereas in *sambucifolia* the leaves are erect. British botanists are now, I believe, willing to accept the validity and distinctiveness of the two species. Recently I have made the acquaintance of a very striking form which is in some ways an intermediate. This I have distributed through the B.E.C. this year (1931).

V. OFFICINALIS L., var. (or sub-sp.) DENTATIFOLIA Druce. It grows in some quantity on the Berkshire Downs at Ashdown, and was conspicuous from its erect growth (robust, not slender), and compact (trifid) cyme of bright rose-pink colour. This seems to be a good intermediate, having the numerous pairs of leaflets (7-9) of *officinalis*, but the dentations (strongly toothed on both sides of the leaflets) nearer *sambucifolia*, as were the compact cymes. Flowers nearly sessile, strongly scented of Valerian; stoloniferous growth. A similar form but with broader leaflets occurred at Great Marlow, Bucks; Cransley Wood, Northants; Wychwood, Oxon (a more slender plant); Burcot, Berks.

Rouy (Fl. Fr., viii., 83) has *V. officinalis* L. " Souche odorante, avec ou sans stolons hypogés. Plante ± velue à la base. Tige de 4-12 décim., dressée, fistuleuse, sillonnée. Feuilles pubescentes, toutes pinnatiséquées, à segments dentés ou entiers. Fleurs rougeâtres, rarement blanches, disposées en corymbe trichotome ample; bractéoles lancéolées-linéaires, scarieuses et ciliées aux bords. Stigmate trifide. Fruit glabre, ellipsoïde-allongé, comprimé. It has four varieties.

a. *genuina* nob. = *V. pratensis* Dierb. Feuilles à 11-15 segments oblongs-lancéolés, le terminal ± denté plus large que les latéraux souvent entiers; tiges de 4-8 décim., ordinairement solitaires et stolonifères.

b. *altissima* Flisch. et Lind. = *exaltata* Mikan, *V. altissima* Bess., *V. multiceps* Wallr. Feuilles à 13-21 segments ± elliptiques-lancéolés, longuement atténués au sommet, denté (au moins sur le bord inférieur), le terminal plus large que la dernière paire; tiges de 6-12 décim., ordinairement non solitaires et non stolonifères.

c. *latifolia* Vahl = var. *major* Koch = *V. procurrens* Wallr. Feuilles à 11-15 segments elliptiques-aigus ou elliptiques-lancéolés, lâchement dentés, le terminal plus large et plus long que les latéraux; tiges de 6-8 décim., ordinairement solitaires et non stolonifères.

d. *minor* Koch = *V. angustifolia* Tausch non L.; *V. collina* Wallr., var. *tenuifolia* Vahl. Feuilles à 13-21 segments étroitement lancéolés ou sublinéaires, entiers ou ceux des feuilles inférieures lâchement dentés, le terminal de même forme et à peu près de même grandeur que les latéraux; tiges plus grêles, de 4-7 décim., ordinairement solitaires et souvent stolonifères.

Sub-species *V. excelsa* Poir. = *sambucifolia* Mikan is given as British by Rouy. Souche ± munie de stolons terminés par une rosette appauvrie de feuilles à 3-5 segments larges, suborbiculaires (et non à segments nombreux et étroits); tige robuste et élevée, ordinairement munie à la base de rameaux florifères grêles, allongés, nus; feuilles à folioles moins nombreuses (5-9), plus fortement dentées, fleurs en cymes plus denses; fruit ovoïde-oblong, plus comprimé.

The second sub-species, V. *hispidula* Boiss. is Pyrenean.

Koch (Syn. Fl. Germ., ed. 3, 1857), treats them under three species.

1. V. *exaltata* Mikan. Leaves all pinnate, leaflets 7-10, lanceolate, dentate-serrate, thick, sulcate; roots many stemmed without stolons= *altissima* Hornem.

2. V. *officinalis* L. Leaves all pinnate, 7-10 paired, leaflets lanceolate, dentate-serrate or entire, stems sulcate, root one stalked, stoloniferous. a. *major* Koch = *procurrens* Wahl., var. *media* Koch, ed. i. Stem tall, leaves all dentate. b. *minor* Koch = V. *angustifolia* Tausch; V. *collina* Wallr. Leaflets entire or feebly dentate. Cultivated it often emits many stolons.

3. V. *sambucifolia* Mikan. Leaves all pinnate, 4-5 pairs of leaflets, oblong-lanceolate, dentate-serrate. Stem sulcate. Root one-stemmed, stoloniferous.

Var. *platyphylla* Druce. The broad-leaved form, upper leaflet oftentimes entire.

Var. *stenophylla* Druce. Leaflets narrow.

(Dr K. H. Zahn has kindly determined the following Hawkweeds).

419/1. H. PILOSELLA L., var. ANGUSTIUS (N. P.) i. (1885) 157. Llyn Coron, Anglesey, 1930, G. C. DRUCE.

Var. HIRSUTUM N. P. Beaumaris, Anglesey, 1930, G. C. DRUCE.

419/13(2). H. KALSOENSE Dahlst. (= MOUGEOTII-SUBRAMOSUM Zahn), sub-sp. BURNENSE Druce et Zahn. Caulis 25-30 cm. subtenuis, breviter subpilosus, (sursum densius) floccosus, 4-7(-10)-cephalus, acladio 3-5 mm., rarius 3(-4), inferioribus 1-2 valde remotis, anthela cana, pilis glandulisque basin versus atris, incrassatisque, modice numerosis subbrevibus obsita. Involucra 7-8.5 mm., crasse cylindrico-ovata sat parva similiter vel paulo magis pilosa, minus glandulosa, squamis latiusculis obtusis vel acutiusculis, partim ± virescenti-marginatis apicem versus subfloccosis subbarbulatis, externis basi densius floccosis. Ligulae magnae, sublatae, subaureae. Styli fusco-brunnei. Folia ubique breviter, margine costâque dorsali et in petiolo subbrevi subangusto subdensius pilosula, denticulata tantum, basalia elliptica vel elliptico-lanceolata, obtusiuscula vel subacuminata, basi subulo vel sensim attenuata; caulinae 1-2, inferius lanceolatum longe acuminatum longe in petiolum ± alatum leviter amplactantam attamatum similiter denticulatum et pilosulum, secundum plerumque reductum. In consortio sub-sp. *anglici*. South Burn, near Rackwick, Hoy, Orkney, 1931, G. C. DRUCE.

419/14(2). H. OLIVACEUM Gr. et Godr. (= CERINTHOIDES < MURORUM (vel PRAECOX)), sub-sp. PSEUDOLANGWELLENSE Zahn (= ANGLICUM-MURORUM). Folia basalia ovato-oblonga v. elliptica obtusa vel oblongo—et angustius—lanceolata sub-vel longe-acuminata, omnia breviter vel longe in petiolum tenuens, ± dense pilosum, brevius vel longius attenuata, margine parvissime glanduloso costâque dorsali ± dense floccosa breviter pilosa, breviter subobtusa vel interiora basin versus usque in petiolum

sublongius acutius dentata; caulina 1(-2) parva floccosa. Caulis parvissime pilosus apice parce glandulosus 2-7-cephalus, acladio c. 2 cm., ramis 3 remotis (inferioribus saepe abortis), pedicellis gracilibus, pilis obscuris setosis paucis, glandulisque brevioribus longioribus permixtis crassiusculis obsitis, dense floccosis atriusculis. Involucra 10-11 mm. lata, atra, modice glandulosa et modice nigropilosa, pilis inferne incrassatis, squamis latiusculis subobtusis vel acutiusculis, intimis acutis vix floccosis. Ligulae luteae, apice vix subciliolatae, stylis obscuris. Loch an Larige. M. Perth, 1930, G. C. Druce.

419/16(2). H. OLIVACEUM Gr. et Godr. (= CERINTHOIDES < MURORUM (vel PRAECOX)), sub-sp. LLYNENSE Zahn. Caulis ad 3 dm., glaber, 3-cephalus, acladio 2-4 cm., ramo furcato—2-cephalo, apice cum pedicellis vix disperse, brevissime pilosus sed ± floccosus, pedicelli obscuri, dense tantum floccosi, brevissime, apice vix modice glandulosi et bracteolis 2-3 angustis obsiti. Involucra 10-12 mm., obscura vix modice breviter subobscure pilosa, parce minute glandulosa, squamis e basi sublatiuscula, longissime attenuatis, ± acutis vel partim longissime subulatis, externis margine basin versus parce floccosis, internis anguste dilutius marginatis. Ligulae magnae perlatae. Styli sublutei, fuscescentes. Folia rigida, supra glabra, ceterum brevissime, in petiolo brevi vel longo subtenui basi latissime vaginante sublongius subdensiuscule molliter pilosa, *partim levissime submaculata*, ovata vel ovato-oblonga vel ovato-vel elliptico-lanceolata, basi rotundata vel ± cito contracta, obtusiuscula vel breviter acuminata mucronato-pluria denticula in costa dorsali ± floccosa; caulinum 0-1, brevissime petiolatum ovato-lanceolatum sat parvum, distincte denticulatum subtus floccosum vel ± reductum. Slopes above Llyn-y-fan Fach, Carmarthen Van, c. 2000 ft., Carmarthen, 1922, H. SALTER.

419/95(2). H. LEPISTOIDES K. Johanns. ex Dahlst. Bidr. ii, (1893) 92. Boughrood, Radnor, 1931; Woodchester, Gloster, 1931, G. C. DRUCE.
Var. BIFOLIUM Dahlst. H. Sc. iii, (1892) n. 53. Monmouth, 1931, G. C. DRUCE.

419/95(3). H. SILVULARUM Jord. ex Bor. Fl. Centre, ed. 3, ii, (1857) 418, pro sp. (Zahn in Engler, p. 314, fig. 28 D). Cliffs beyond Kingsdown, Walmer, E. Kent, September 1882, CASTALIA, COUNTESS OF GRANVILLE.

419/124. H. ALFVENGRENII Dahlst. H. Sc. x. (1896), n. 59, var. PLURIFOLIUM Zahn. A typo foliis caulinis 5-6 (breviter dentatis), involucris saepe epilosis differt. Near Callington, Cornwall, 1927, H. WISE.
Var. GROSSIDENS Zahn. A typo differt foliis caulinis inferioribus 2-3, magnis late ovato-lanceolatis, grosse 3-4 dentatis, reliquis 2 oblongo-lanceolatis infra medium grosse longe dentatis, summo angusto. Arthog, Merioneth, 1923, Mrs WEDGWOOD, as *H. paucifoliatum*, det. J. ROFFEY.

419/126. H. CHLOROPHYLLUM Jord., var. CALVESCENS Zahn in Engler, p. 363. Ludlow Wall, Shropshire, 1930, Miss TODD; Outershaw, Yorks, 1930, G. C. DRUCE.

419/128. H. PINNATIFIDUM Lönnr., var. GENUINUM Dahlst. Boughrood, Radnor, 1931, G. C. **DRUCE**.

419/145. H. TRIVIALE Nörrl. (See Druce Br. Pl. List. ed. ii., p. 69, where it is queried). Ben Eay, W. Ross, 1931, R. H. **CORSTORPHINE** and J. **CHAPPLE**.

419/184(7). H. MACULATUM Sm., sub-sp. ASPERATUM Jord. pro sp. in Bor. Fl. Cent. Fr., ed. 3, ii. (1857), 406; Zahn in Engler. p. 514, forma IMMACULATUM Zahn—foliis immaculatis a typo differt. Near Ross, Hereford, 1931, G. C. **DRUCE**.

419/184(8). H. MACULATUM Sm., sub-sp. POLLICHIAE Sch.-Bip. pro sp. in O. B. Wochenbl., iii. (1853), 247; Zahn in Engler, p. 516, sub-var. NORMALE, a verum Zahn. Boughrood, Radnor. 1931, G. C. **DRUCE**.

419/197(2). H. EUCHRYSOSTYLUM Zahn in Engler, p. 814. Near Aith Head, S. Walls, Orkney, 1931, G. C. **DRUCE**.

419/207. H. TRIDENTATUM Fr., var. POLYPHYLLUM Zahn in Engler, p. 866, fig. 60 Gi, sub-var. ANGUSTIFOLIUM Uechtr. in sched., forma SUBPILOSICEPS Zahn, *l.c.*, p. 867. Bracknell, Berks, 1931, G. C. **DRUCE**.

419/229(2). H. LEVIGATUM Willd. Sp. Pl., iii., 3 (1800), p. 1590, sub-sp. BICHLOROPHYLLUM Druce et Zahn. Caulis 25-60 cm., usque supra acladium breviter hirsutus, tenuis vel gracilis, paniculato-cymosus, acladio pedicellisque 25-50 mm. longis, floccosis tantum (raro pilis valde solitariis obsitis) superne angustissime bracteolatis et leviter incrassatis, oligo-vel pleiocephalus. Involucra 8-9.5 mm., brevia lata, viridiatra ± efloccosa, glandulis pilisque minutis solitariis vel subnullis obsita, squamis latiusculis obtusis vel (intimis) ± acutiusculis, externis subnumerosis brevibus laxis. Ligulae subangustae. Styli lutei. Folia caulina 15-30, sensim decrescentia, ima emarcida, inferiora late oblongo-lanceolata, obtusiuscula, sequentia sensim angustiora acutiora, magis magisque lanceolata vel summa linearia, denticulata tantum, nigra dilute gramineo-viridia et epilosa, subtus albido-glauco-viridia et praesertim in costâ margineque breviter pilosula, simul ± floccosa, omnia in basin (in inferioribus petioliformen) attenuata. Sub-sp. *perrigidum* Zahn in Engler Consp., 891, affine. Molland, N. Devon, 1930, G. C. **DRUCE**.

419/241. H. UMBELLATUM L., var. TRACHYPHYES Zahn in Engler, p. 912, sub-var. NORMALE Zahn, *l.c.*, f. VERUM Zahn, *l.c.* Middleton-in-Teesdale, Durham, 1930, G. C. **DRUCE**.

419/245. H. CROCATUM Fr., var. NORMALE Zahn in Engler, p. 923. Pegal Bay, Hoy, Orkney, 1931, G. C. **DRUCE**.

419/245(2). H. AESTIVUM Fr. (= UMBELLATUM-PRENANTHOIDES Grex H. CROCATUM Zahn), sub-sp. HEMITRACHYS Druce et Zahn, sub-sp. CROCATO Fr. affine. Caulis tenuis, 3-7 dm. altus, usque in summa tertia parte subbreviter, hirsutus, superne haud vel disperse subdilute setulosus, 1-3(-4)-cephalus, acladio c. 25 mm., ramis 1-2(-3) subremotis tenuibus, cephalis saepe abortis, subcanofloccosis tantum vel vix disperse subdilute setulosis eglandulosis. Involucra 9-11 mm., crassa, subatra, vix vel ± disperse setulosa vix vel parce sublonge glandulosa, squamis triangulariter lanceolatis, obtusis vel obtusiusculis, interioribus obscure viridimarginatis, externis margine basin versus parce floccosis. Ligulae subangustae, sublonge dentatae, dentibus vix subpapillosis. Styli lutei. Folia c. 15, sensim minora, lanceolata, rigida subtus, vel in costâ margineque subdensius, breviter setulosa; superiora minus pilosa; summa glabrescentia; omnia subtus parce, superiora densius floccosa; media basi subattenuata vel lata sessilia subamplectentia. Pegal Bay, Hoy, Orkney, August 1931, G. C. DRUCE.

419/250. H. DUMOSUM Jord., var. GENUINUM Zahn, sub-var. SEMIPILOSUM Zahn. Burnham Beeches, Bucks, 1931, G. C. DRUCE.

419/256(2). H. SUBLACTUCACEUM Zahn in Koch Syn., ed. 3, iii. (1901), 1917, et in Engler, p. 954, var. RADNORICUM Druce et Zahn. Folia dilute, subtus albido-viridia, margine subtusque tantum brevissime pilosula, breviter dentata, sensim decrescentia. Caulis subpilosus. Involucra atra, parvissime floccosa, pilis glandulisque solitariis obsita, squamis obtusis. Styli subobscuri. Boughrood, Radnor, 1931, G. C. DRUCE.

423/43(2). TARAXACUM AUROSULUM Lindb. f., forma. Near Goring, Oxon, 1931, G. C. DRUCE.

423/54(2). T. EKMANII Dahlst., forma. Near Goring, Oxon, 1931, G. C. DRUCE.

(New British Species of TARAXACA. We are greatly indebted to Dr Dahlstedt for the following descriptions.)

423/65(2). TARAXACUM LACERILOBUM Dahlst., n.sp. Folia sat laete viridia, lineari-lanceolata—lanceolata, lobis plurimis approximatis—sat distantibus, a basi lata margine superiore ± convexo subito in apicem longum, integrum, supra medium ± dilatatum obtusiusculum—breviter acutum protractis, in margine superiore vulgo etiam in inferiore dentibus ± longis, ± subulatis parvulis—porrectis praeditis, lobo terminali parvo triangulari, ± longe dentato, in foliis interioribus majore parce inciso; petiolis leviter violascentibus, nervo mediano pallido. Scapi plures, longe folia superantes. Involucrum crassiusculum, ± atroviride. Squamae exteriores anguste lanceolatae, ± longae in apicem longum angustum protractae, ± recurvatae—reflexae. Calathium 40-45 mm. diametro. Ligulae obscure luteae, marginales extus striâ atro-violaceâ notatae. Antherae replete polliniferae. Stylus cum stigmatibus ± fusco-virescens. Achenium c. 3 mm. longum, 1 mm. latum, ± fusco-stramineum, superne ± spinulosum, inferne ± tuberculatum, in pyramiden c. 1 mm. longam, conice-cylindricam sat abrupte abiens. Rostrum

10-11 mm. longum. Owing to the deeply incised and long subulate dentate lobes, this species has a highly distinct appearance. The lobes taper from a broad gibbous base with long dentations on the upper margins into a more or less enlarged, blunt, or short-acute apex entire above the middle. The outer phyllaries are very narrow and very elongated. This species has a very great resemblance in its leaves to some Swedish species, but it does not seem to be allied to them. Wilbury Hill, Herts; Ivinghoe Beacon, Bucks, H. PHILLIPS.

423/77(2). T. PANNULATIFORME Dahlst., n. sp. Folia subobscure viridia lineari-lanceolata—lanceolata, lobis sat approximatis, basi latiuscula, deltoidea, acutis saepe longis in margine superiore, ± denticulatis —dentatis, summis singulis apice saepe rotundatis, lobo terminali parvo —mediocri, hastato—triangulari, ± acuto, integro, lobulis lateralibus acutis v. interdum uno alterove labulo obtuso-rotundato, in fol. interioribus majore basi ± dentato-inciso. Scapi plures folia superantes ± pallidi. Involucrum crassum, sat magnum, ± atroviridi, basi truncata. Squamae exteriores latiusculae ovato-lanceolatae, ± recurvatae. Calathium 45-50 mm. diametro. Ligulae obscure luteae, marginales extus striâ canoviolaceâ notatae. Antherae parce polliniferae. Stylus cum stigmatibus ± fusco-virescens. Achenium fusco-stramineum, c. 3.5 mm. longum, 1 mm. latum, apice brevi spinulosum, caeterum ± tuberculatum in pyramiden, 0.5 mm. longam, ± conicam, sensim abiens. Rostrum 8-10 mm. longum. This species seems to be closely allied to *T. pannulatum* Dahlst. from Scandinavia, but differs from it by its paler petioles and middle nerves, and by its more acute and less dentate, never laciniate, lobes. As in *T. pannulatum*, the upper lobes, and the lobules of the terminal lobe are often rounded at the apex. Clifton, Beds; Icklingham, W. Suffolk; Hitchin, Herts, H. PHILLIPS.

423/77(3). T. PANNULATUM Dahlst., modif. Near Goring, Oxon, 1931, G. C. DRUCE.

423/80(2). T. PORRECTIDENS Dahlst., n. sp. Folia laete viridia, lobis plurimis mediocribus—longis, ± angustis, patentibus (singulis interdum ± porrectis), apicibus ± longis, acutis, saepe retroversis, in margine superiore dentibus longis—longissimis, acutis—subulatis, saepe ± porrectis, in margine inferiore dentibus saepe retroversis praeditis, lobo terminali mediocri—magno latiusculo—sat lato sagittato—hastato, integro v. in uno alterove latera dente singulo acuto saepe porrecto instructo; in foliis interioribus lobo terminali ± producto, ± dentato; petiolis leviter violascentibus, nervo dorsali magis conspicue violascente. Involucrum mediocre, subobscure virescens v. olivaceo-viride, basi ± truncata. Squamae exteriores ± lanceolatae—anguste ovato-lanceolatae, acuminatae sat conspicue marginatae ± recurvatae. Calathium 35-70 mm. diametro. Ligulae obscure luteae, marginales extus striâ sat obscure violaceâ notatae. Antherae polliniferae. Stylus cum stigmatibus ± fusco-virescens. Achenium ± fusco-stramineum, 3 mm. longum, 0.75

mm. latum, apice ± spinulosum, caeterum leviter tuberculatum v. laeve, in pyramiden c. 0.75 mm. longam cylindricam abiens. Rostrum 8-9 mm. longum. *T. porrectidens* is mainly characterised by its very narrow, long lobes, with long, very often upward or downward turned entire ends, and with long, very often upward directed acute teeth. Also by its broadly sagittate-hastate endlobes with a sharply upturned tooth on one or the other side, near the base. Wymondley, Hitchin, Herts; Saffron Walden, N. Essex, H. PHILLIPS.

423/82(2). T. PSEUDOHAMATUM Dahlst., n. sp. Folia sat laete viridia, linearia—lineari-lanceolata, lobis ± distantibus—sat approximatis, deltoideis—subhamatis, sat acutis, integris v. inferioribus in margine superiore ± subulato-dentatis, lobo terminali sagittato—subhastato, parvo—mediocri, acuto—acutiusculo integro, marginibus saepius ± convexis, in fol. interioribus majore minus acuto, petiolis et nervo mediano leviter violascentibus. Scapi folia superantes. Involucrum crassiusculum, ± atroviride, basi ovato-rotundata. Squamae exteriores lanceolatae—anguste, v. late ovato-lanceolatae, erecto-patentes, v. leviter recurvae. Calathium 40-45 mm. diametro. Ligulae obscure luteae, marginales extus striâ canoviolaceâ notatae. Antherae polliniferae. Stylus cum stigmatibus ± fusco-virescens. Achenium 2.8-3 mm. longum, 0.8 mm. latum, apice ± acute spinulosum caeterum tuberculatum, ± obscure fusco-stramineum, in pyramiden 0.7 mm. longam conico-cylindricam sat abrupte abiens. Rostrum 10-11. longum. This species has some resemblance to *T. hamatum*, according to the leaves and outer phyllaries, but it differs from it by having less hamate, often only deltoid lobes, narrow outer phyllaries, and more feebly coloured petioles. Hitchin, Herts; Ivinghoe, Bucks, H. PHILLIPS.

423/82(4). T. RECURVILOBUM Dahlst., n. sp. Folia sat laete viridia, elongata, multilobata, lineari-lanceolata—lanceolata, lobis ± approximatis—sat distantibus recurvis—valde hamatis, apicibus ± longis, integris, acutis, saepe valde recurvatis in utroque margine dentibus mediocribus—longis acutis, saepe valde porrectis instructis, lobo terminali valde sagittato, brevi—mediocri integro acuminato, lobulis lateralibus valde retro-curvatis; lobis in fol. interioribus saepe magnis—maximis et lobo terminali magno lato integro v. saepe magis elongato et ± dentato; folia intima lata, ± oblongo-lanceolata, basi ± late lobata v. subintegra ± dentata, petiolis et nervo mediano ± violascente. Scapi folia aequantes v. superantes, ± colorati. Involucrum sat magnum, crassum, obscure olivaceo-viride—sat atroviride. Squamae exteriores longe lineari-lanceolatae, leviter marginatae, ± retroflexae. Calathium 45-50 mm. diametro. Ligulae obscure luteae, marginales extus striâ obscure violaceâ notatae. Antherae polliniferae. Stylus cum stigmatibus obscure fusco-virescens. Achenium 3-3.5 mm. longum, c. 1 mm. latum, fusco-stramineum, apice ± spinulosum, caeterum tuberculatum, in pyramiden 1 mm. longam cylindricam sat abrupte abiens. Rostrum c. 10 mm. longum. *T. recurvilobum* is chiefly distinguished by its highly recurved

hamate leaf-lobes with long, very often, upturned teeth. The leaves vary from lanceolate with very distant lobes to broad with more approximate and longer lobes. The endlobe is on the narrower or outer leaves of middle size and acuminate, on the broader leaves ordinarily large, acute, or on the inner, more or less elongated and dentated. Stevenage, Hitchin, Wilbury Hill, Berkhamstead, Herts; Ivinghoe Beacon, Castlethorpe, Bucks; Clifton, Beds, H. Phillips. A form allied to *T. recurvilobum*, and perhaps a grass-form of it from Ivinghoe, Bucks; Hitchin, Herts, H. Phillips. Modif., Clifton, Beds; Hitchin, Wilbury Hill, Berkhamstead, Baldock, Herts; Ivinghoe, Bucks; Mitcheldever, S. Hants, H. Phillips.

423/85(2). T. **submucronatum** Dahlst., n. sp. Folia laete viridia, multilobata, lobis triangularibus—deltoideis, basi ± lata, ± longe acutis in margine superiore, ± subulato-dentatis v. superioribus ± integris; lobo terminali sagittato, parvo—mediocri integro ± longe acuminato; petiolis et nervo mediano ± pallidis. Scapi plures folia ± superantes. Involucrum obscure (atro-) viride, basi ± truncatum. Squamae exteriores ± late lineari-lanceolatae—lanceolatae, ± acuminatae, leviter marginatae, ± patenti-recurvatae, exteriores lineari-lanceolatae, omnes ecorniculatae. Calathium sat obscure luteum, c. 45 mm. diametro. Ligulae ut videtur leviter canaliculatae, marginales extus striâ obscure violaceâ notatae. Antherae polliniferae. Stylus et stigmata ± fusco-virescentes. Achenium ± fusco-stramineum, c. 3 mm. longum, c. 8 mm. latum, superne ± spinulosum, inferne ± tuberculatum, in pyramiden c. 5 mm. longam conico-cylindricam sensim abiens. Rostrum c. 9 mm. longum. This species seems to be closely allied to *T. mucronatum* Lindb. f., from which it differs by more plentifully lobed leaves with more subulate dentate upper margins, paler petioles and middle nerves, and darker involucres with more faintly margined edges to the phyllaries. Icklingham, W. Suffolk; Hitchin, Herts, H. Phillips.

423/92(2). T. **tanyphyllum** Dahlst., n. sp. Folia laete viridia, elongata, multilobata, lobis angustis, longis, distantibus, breviter acutis, cum interlobiis ± longe subulato-dentatis; lobo terminali brevi hastato, apice interdum producto integro, in fol. interioribus latiore et longiore obtusiusculo, marginibus ± convexis in uno alterove latere ad basin ± inciso; petiolis et nervo mediano pallidis. Scapi plures folia superantes, ± pallidi. Involucrum sat magnum, subcrassum, obscure viride—atroviride, basi truncatum. Squamae exteriores ± ovato-lanceolatae, obtusiusculae—breviter acuminatae (? haud) marginatae, ± patentes—patenti-recurvatae. Calathium 45-50 mm. diametro. Ligulae obscure luteae, marginales extus striâ canoviolaceâ notatae. Antherae polliniferae. Stylus cum stigmatibus ± fusco-virescens. Achenium c. 3 mm. longum, ad 1 mm. latum, fusco-stramineum, superne breviter spinulosum, caeterum ± tuberculatum, in pyramiden vix 0.5 mm. longam sensim abiens. This species is well distinguished by its elongated leaves, with more or less long and very narrowly separated partly subulate-dentate lobes, hastate on the outer leaves, short on the inner ones, and more or less large terminal lobes convex at the base, often with incised margins. The heads are very large, greenish-black, with very broad, more or less prominent to rather recurved, outer phyllaries. Seems to be related to *T. laciniosum* Dahlst. from Sweden. Clifton, Beds; Ivinghoe, Bucks, H Phillips.

Var. **latius** Dahlst., nov. var. This form differs from *T. tanyphyllum* by its broader less separate lobes, and larger terminal lobes, while the outer ones are more acute, the inner ones are larger and more entire. Perhaps this form is only a modification of the species. Hitchin, Herts; Ivinghoe, Bucks; Clifton, Beds, H. Phillips.

428/1-2. **Tragopogon porrifolius × pratensis** (minus Mill.). Further observations on hybrids between these species. See *Rep. B.E.C.*, 1930, 272.

1. Phenology:	First Flowering, 1931.
porrifolius	(in miscellaneous colony at Gt. Yarmouth) May 5. (200 fl. on May 25).
porrifolius	(seeds set July 10, 1930, Gorleston) May 29.
pratensis (*minus*)	(in miscellaneous colony at Gt. Yarmouth) May 25. (9 fl. on May 28).
pratensis (*minus*)	(wild, Norwich Castle) June 8.
pratensis (*minus*)	(seeds set July 10, 1930, Gorleston) June 16.

2. Flowering, Seeding, Germination:

Capitulum opens on three successive days (average).

Seed takes about 21 days to mature (varies with climate).

Germination takes 8-9 days under normal conditions in July, viz., July 10 to 18-19, 1930, Gorleston.

The yellow capitulum of *pratensis* (*majus*) closes earlier and more rapidly than that of any other form as the morning advances. The slowest to close is *Pattersoni*, the dark, reddish-purple *minus* form. The length of time during which the capitula remain open depends largely on the amount of sunshine received: for instance, on some dull days in early June they had not all closed by 2 p.m. (Greenwich mean time), while on the morning of June 21st all but *Pattersoni* were completely closed at 9 a.m., after several hours of sunshine.

3 Reproduction:

Two new types,* and all those previously described, have appeared in the F3 generation.

*(a) A *majus* form of *Barnardae* (3 plants).

*(b) An almost white form of *Hallsi* (8 plants, 4 of them from seed-parent *Hallsi*).

The following results were obtained in the F3 generation, the seed-parents being known in each case:

SEED-PARENT.	PRODUCT.	
porrifolius	*porrifolius*	27
pratensis minus	*pratensis minus*	12
pratensis	*pratensis*	9
	pratensis minus	3
Saintyae	*Saintyae*	3
	porrifolius	14
	Hallsi	4
	Howardi	1
	Rumbelowi	1
	Barnardae	1
	Taylori	1
Hallsi	*Hallsi*	14
	porrifolius	13
	pratensis minus	2
	pallidus (new)	4
	Howardi	1
	pratensis majus	1
Brunningi	*Brunningi*	1
	porrifolius	7
	pratensis minus	1
	Hallsi	6
Barnardae	*Barnardae*	2
	pratensis minus	1
Pattersoni	*Pattersoni*	6
Rumbelowi	*Barnardae*	2
	Hallsi (reddish)	1
Readei	*Readei*	1
	porrifolius	10
sterilis	*porrifolius*	3
	Readei	2
	Saintyae	1
	Hallsi	3
	Rumbelowi	1

Self-fertilisation is predominant in *Tragopogon*: the stigma-lobes grow up at a visible rate, sweeping the pollen out of the corolla-tube as the capitulum expands in the morning. There is also a certain amount of cross-pollination effected by bees, particularly some of the smaller solitary species that come for honey and pollen. The latter they scrape off the stigma-lobes with their second pair of legs, packing it on to the hindmost pair. I have noticed that these bees have a curious selective faculty which comes into play when they visit these flowers. The hybrids grow in a patch in my garden, the various kinds close together. The first fact which became clear was that a bee which was collecting pollen from the large purple *porrifolius* was never attracted to a yellow *pratensis* or *pratensis* (*minus*), and vice-versa. But one visiting *pratensis* would frequently drop on the yellow centre of the capitulum of one of the hybrids. If it alighted by chance on the bronze or purple outer florets, it usually fiddled for a moment and flew off. Similarly, the outer florets attracted the harvesters of *porrifolius* to *Saintyae*, *Hallsi*, etc.

E. A. ELLIS.

435/5. CAMPANULA ROTUNDIFOLIA L., var. FISSA Druce, nov. var. Plant strict; racemes narrow, elongated; corolla split more than half-way down. Found on the roadside near Winterburn Skipton, N.W. Yorks, 1931, by Mr A. TURNER, G. C. DRUCE.

435/5. C. ROTUNDIFOLIA L., var. LINEARIFOLIA (Dum.) Hayek. Outershaw and Coniston Cold, N.Y. Yorks, 1930, G. C. DRUCE.

493. LAPPULA Moench is treated by A. BRAND in Das Pflanzenreich, 97 Heft, 1931. Mr Brand divides it into two parts. Our *L. deflexa* Garcke he puts in 493/bis as *Hackelia* Opiz, and 493/1 ter. *H. tenella* Opiz. Here too, he puts *H. deflexa* Lehm. *Lappula minima* (Lehm.) Dr. he puts in the genus 493/3 *Heterocarpyium* A. DC. and unites it with 493/5 *L. Szovitsiana* (F. & M.) Dr. The well-known name *Eritrichium nanum* he restores, since Villars used the trivial in 1779, whereas Hacquet's *terglovienae* is more recent.

500. CYTOLOGY OF ANCHUSA and its relation to the Taxonomy of the genus. S. G. SMITH, McGill University. Nature, 494, 1932. The results go to show that *sempervirens* is in a distinct genus *Caryolopha*, and *Anchusa myosotidiflora* Lehm. = *Brunnera macrophylla*.

†529/4. CALCEOLARIA SCABIOSIFOLIA Sims. Alien. S. America, Peru. Introduced in 1832, Bot. Mag., 1832. Rubbish-dump, near Bideford, N. Devon, 1931, G. C. DRUCE. Det. J. FRASER.

535. SCROPHULARIA. The well-known authorities, Dr W. A. Goddijn and Dr Goethart, have gone through my British specimens of *Scrophularia*. They say that practically all my determinations were correct, so in only a few cases had they appended notes. They are sceptical about the hybrid, *S. alata* × *aquatica* = × *S. Hurstii*, from Shalbourne, Wilts and Berks. As to synonymy they use the name *S. Balbisii* (*aquatica*), *S. Neesii* Wirtgen and forma *umbrosa*, which are the least confusing. They remark that the English *S. Ehrharti* Stev. is not the same as *S. umbrosa* Dumort. and (probably) *alata* Gilib., but is really *S. Neesii* Wirtg. Most English botanists think *S. Balbisii* is equivalent to *S. aquatica* L., an opinion shared by M. Dumortier as well as Mr Steven (sic Stevens) based on the Linnean Herbarium specimens. They "do not think this right—as far as a photograph of the Linnean specimen could enlighten us, we are convinced that the specimen is an aberrant shoot of *S. Neesii* (*Ehrharti* Stev.). Quite identical shoots are very common late in the fall in *S. Neesii*, but we never saw such shoots with elongated lanceolate leaf-like bracts in *S. Balbisii* Horn." The supposed hybrid found by Mr Towndrow in his garden, where *Neesii* and *Scorodonia* both grow (*Rep. B.E.C.*, 312, 1927) is considered by these experts to be a teratological form of *S. Neesii*. That possibly may be the origin of ×*S. Hurstii* at Shalbourne, but that plant has some curious characters which make it difficult to decide. One must try to refind it in the fresh state.

Scrophularia Neesii Wirtg. in Verh. Nat. Ver. Rheinl., i., 1844, Fl. Preuss. Rhein., 325. Rouy (*Fl. Fr.*, xi., 92) makes var. *Neesii* Asch. a variety of *S. alata.* Feuilles plus larges, ovales; staminode à lobes étalés horizontalment, divariqués, faiblement 3-denté au sommet. Nyman *Consp.* 532, puts *S. Balbisii* Horn. as *S. oblongifolia* Lois. *S. aquatica* L. (p.m.p.) = *S. umbrosa* Dum., *S. Ehrharti* Stev. with *S. Neesii* and *S cinerea* Dum. as subordinate forms.

S. Neesii Wirtgen. (Verhandl. des naturhist. Vereines, i., p. 29). Foliis ovato-oblongis ovatisve glabris inferioribus obtusiusculis crenatis, mediis superioribusque acutis serratis, serraturis inferioribus minoribus, caule petiolisque lato-alatis, panicula terminali, laciniis calycis subrotundis obtusissimis lato—membranaceo-marginatis, appendice staminodii transverse oblonga longitudine sua triplo latiore postice truncata antice leviter et plerumque cum denticulo emarginata. Ad rivos et fluvios (an der Nette dei Neuwied, im Siechhausthal bei Coblenz; bei Dusseldorf, Wirtgen), July-September. "Omnibus pertibus tenerior, rami caulis et paniculae fere rectangule patentes; corolla laetius rubra quam antecedentis et, basi excepta, nunquam colore rubro viridi mixto *tincta.*" Wirtgen, *l.c.* Staminodii appendix latere anteriore saepe leviter emarginata cum denticulo interjecto. Kimbolton, Herefordshire, 1856, W. H. PURCHAS. On this Dr Goethart writes:—"Though the leaves, including those of the middle of the stem, are somewhat serrate and have cuneate bases and rather pointed apices we are convinced that this specimen belongs to *S. Neesii* Wirtg. (*Ehrharti* Stev.!). It has the inflorescence, bracts, fruit form and staminode of *S. Neesii.*" Walton, Scoulsby Mere, W. Norfolk, 1904, DRUCE, N.C.R.; Eden, Roxburgh, 1875, A. BROTHERSTON; Whitnash, Warwick, 1867, BROMWICH; Gisburn, Yorks, 1845, J. TATHAM; Little Malvern, Worcester, 1915, A. J. CROSFIELD; River Terne (as *umbrosa*), Bramsford, Worcester, R. F. TOWNDROW; Compton Abdale, E. Gloster, 1919, H. J. RIDDELSDELL, as *alata*; Lyrach Brook, Ludlow, Hereford, 1892, DRUCE (as *umbrosa*); Bringwood Chase, Salop, 1892, DRUCE; Shalbourne, Wilts, N.C.R., 1915, HURST (as *alata*); Pitairlie Den, Angus, shown to me by Mr and Mrs CORSTORPHINE, 1912 and 1915, DRUCE; Whitnash, Warwick, 1903, BRUCE JACKSON (as *umbrosa*), "not *umbrosa* but *Neesii* Wirtg.", GODDIJN and GOETHART, 1931; Medbourne, Leicester, 1916 (as *alata*); Gogar Burn, Edinburgh, 1852, W. BELL.

Scrophularia nodosa (L. Sp. 863). Foliis ovato-oblongis ovatis subcordatisve glabris duplicato-serratis, serraturis inferioribus longioribus acutioribusque, caule argute quadrangulari, petiolis exalatis, panicula terminali, laciniis calycis ovatis obtusis angustissime membranaceo-marginatis, appendice staminodii breviter obovata vel transverse oblonga obsolete emarginata. In sylvis humidis, ad fossas, ripas, pratorum dumeta. June-August. D.fl. 4, p. 404. St.h. 23. Flores triste olivacei, dorso brunnei, raro ubique virentes. Under *S. nodosa* L. they admit my var. *Trachelioides* from Brecon and my var. *bracteata* from Hurst, Berks.

S. Balbisii (Hornem. Hort. Hafn. 2, p. 577). Foliis cordato-oblongis rotundato-obtusis glabris obtuse crenatis ad basin saepe foliolo minuto binisve auriculatis, caule petiolisque lato-alatis, panicula terminali, calycis laciniis subrotundis obtusissimis lato-membranaceo-marginatis, appendice staminodii subrotunda vel subrotundo-reniformi vix emarginata. In paludosis, locis humidis, ad fossas (bei Aachen haufig Hornung; am Ufer der Mosel v. Moselweiss bis Coblenz, 1-3 Stunden v. Coblenz entfernt, Wirtgen; Carlsruhe, Alex. Braun; im Elsass, Kirschleger). June-July. D.fl. 4, p. 406. *S. aquatica* L. conf. *Bab. Man.*, p. 310. Flores maiores, quam *Scrophulariae Ehrharti*, toti purpureo-fusci, basi tantum virides.

The *S. aquatica* L., var. *angustifolia*, Trent-side, Nottingham, R. Bulley, they call a teratological form. Var. *cinerea* Dum. is the usual British form, says Linton.

S. Ehrharti (C. A. Steven, conf. Babington Manual of Brit. Bot., p. 310). Foliis ovato-oblongis ovatis subcordatisve glabris acute serratis, serraturis inferioribus minoribus, caule petiolisque lato-alatis, panicula terminali, laciniis calycis subrotundis obtusissimis lato-membranaceo-marginatis, appendice staminodii obcordato-biloba, lobis divaricatis. Ad fluvios, rivos, piscinas fossasque, et in aqua ipsa. July-September. *S. aquatica* Koch Syn., ed. i., p. 515, et omnium auctorum ad nostra tempora. D.fl. 4, p. 405. St.h. 23. Flores dorso purpureo-fusci minus triste colorati quam antecedentis. Rami paniculae angula semirecto patentes. The Latin descriptions are from Koch *Syn. Germ. et Helv.*, 446, 1857.

†543/40. Veronica Lobelioides Hort = V. elliptica × speciosa, var. Blue Gem. Hortal. On waste ground, Hayle, W. Cornwall; Bideford, N. Devon, 1931, G. C. Druce.

561/10. ×Thymus Jacksonii Ronniger in Rep. B.E.C., 278, 1931 =T. neglectus × Pulegioides, var. Chamaedrys. Minchinhampton, Selsley Common, W. Gloster; Chinnor Downs, Oxon, 1931, G. C. Druce.

586/1. Teucrium Scorodonia L. A curious, cleistogamous form, having unusually large, thin leaves, long crenatures, sometimes doubly crenate, or with cuspidate crenatures, occurred on a wooded bank at Woody Bay, N. Devon, 1931. G. C. Druce.

588/10. Plantago major L., var. vulgaris, forma scopulorum, sub-forma dura Pilger in Fedde Rep. xviii., 509, 1922. Near *nana* Tratt. Arch. Gerv., 1812, t. 23. Not *intermedia* Gil. I.P.E., 1911, Silverdale, v.-c. 69, G. C. Druce.

Var. vulgaris, f. intermedia (Gilib.) Pilg., sub-forma minor (Gilib.) =P. nana Tratt. [Ref. No. 325]. Countesbury Common, N. Devon, 1917, W. C. Barton.

600/1. Chenopodium rubrum L., var. vel forma rigidulum. Liverpool, S. Lancs, J. W. Lewis; Ross Links, Northumberland, Rev. H. E. Fox; Dallington, Northants, G. C. Druce.

Var. vel forma Kochiiforme Murr. Bedminster, W. Gloster, C. & N. Sandwith; Iver, Slough, Bucks, G. C. Druce.

Var. vel forma PSEUDO-BOTRYODES Watson. Kisthorn Loch, Fife, 1870, BOSWELL SYME; Ditton, Surrey, 1868, H. C. WATSON; Highton, S Lancs, J. A. WHELDON; Hurst, Berks; Holy Isle, Northumberland, G. C. DRUCE.

Var. BLITOIDES Ley. Treludderow, St Newlyn East, W. Cornwall, 1909, C. C. VIGURS, as *C. urbicum*, var. *intermedium*.

608/8. C. VARIABILIS Aellen, var. MURRII Aellen in Fedde Rep. Avonmouth, W. Gloster, C. SANDWITH and J. W. WHITE.

600/8. C. ALBUM L., var. OVATUM Aellen as sub-sp. Avonmouth, W. Gloster, C. SANDWITH and J. W. WHITE.

†600/28(2). C. HOLOPTERUM (Thell.) Thell. & Aell. Alien, Galashiels, 1914, G. C. DRUCE and Miss I. M. HAYWARD.

631(2). SEIDELIA Baill. Etud. Euph. 465, t. 9, 1858.

†631(2)1. S. MERCURIALIS Baill., *l.c.*, 466. Alien, S. Africa. A monotypic genus. Cinder heap, Tower Hamlets, Dover, E. Kent, 1930, J. W. LONG.

684/1. HYDROCHARIS MORSUS-RANAE L. Miss Pickard, writing from Glynde, E. Sussex, on January 2nd, 1931, says:—"I found (today) quite fat Frogbit resting buds and one which had sent up a leaf nearly an inch across." On January 15th I visited the spot and induced other buds to rise by stirring the mud at the bottom of the ditch. These buds measured 16 mm. in length. On January 19th these prematurely risen buds remained floating on the surface unopened. On February 7th three out of four buds, brought home and placed in a glass bowl, sank to the bottom. One, however, remained floating, and put out a leaf three mm. in breadth. Resting buds were found on a plant taken at Glynde on August 28th, 1931, J. G. DALGLEISH.

†702/13(2). ALLIUM PORRUM L. Common Leek. Hortal. Henfield, E. Sussex, 1931, E. PAYNE, teste J. FRASER.

†704/2. HYACINTHUS ROMANUS Reichb. = BELLEVALLIA ROMANA Sweet. Alien, S. Europe. South Meadow, Eton. Bucks, 1931, A. M. BALFOUR.

†717/4. COMMELINA COELESTIS Willd. Alien, Mexico. Sidings of the Olympia Cake & Oil Co., Selby, E. Yorks, September, 1931, H. FOSTER. Also, from the same locality, distributed this year (1931) by W. A. SLEDGE, as *C. nudiflora* L., teste Kew. Det. J. FRASER.

732/1. SAGITTARIA SAGITTIFOLIA L. In May 1927 several young plants were found in Lewes Levels growing from tubers bearing ribbon-shaped laminae, and others of a distinct spatulate type. Digging up a plant in the late summer or early autumn, among the leaves at the base will be found some white stolons each one bearing scale-leaves and terminating in a bud. Many stolons may arise from a single plant. The varied forms of leaves is of great interest to the student of causes. *Sagittaria* frequently shows all three types of lamina on the same plant, ribbon, spatulate, and sagittate forms. The first leaves produced by a seedling are ribbon-shaped whether the plant is wholly or only partially submerged. It is difficult to realise, when observing the long streaming leaves which rise and fall with the swift current of rivers, that this is the same plant which can be found bearing sagittate leaves growing in a near-by ditch, but here and there from among this submerged tangle there struggles to the surface a sagittate leaf. The floating forms of *Sagittaria* are fairly plentiful in Sussex marsh drains, but rarely, if ever, produce flowers, J. G. DALGLEISH.

735/5. POTAMOGETON ALPINUS Balb., var. PALMERI Druce in Rep. B.E.C., 1929. When staying with Miss C. E. Palmer at Odiham in North Hampshire in 1904, she showed me a handsome Pondweed growing plentifully in the Basingstoke Canal, which she had first noticed there in 1882. It had somewhat of the facies of *praelongus*, and I queried it as a possible hybrid—"*alpinus* ? × *praelongus*" in my "Plant List," p. 73, 1908. Subsequent collection and examination failed to detect *praelongus* in it, and Mr Arthur Bennett said the second supposed parent was non-existent in this Canal. Later on I submitted a large series to Mr Bennett, who agreed with me that it was a variety, and suggested that I should name it var. PALMERI, which I did in *Rep. B.E.C.*, 1929, p. 98 and p. 140. Mr Pearsall has recently had, from two different stations in this Canal, fine fruiting examples which show the fruit to be that of normal *P. alpinus*, G. C. DRUCE.

746/3. SCIRPUS (SCHEONOPLECTUS group) in Britain, J. E. LOUSLEY in Journ. Bot., 151, 1931. In this useful note Mr Lousley gives varietal rank to var. *fluitans* (C. & G.) Husnot of *S. lacustris*; var. *capitatus* Hausskn. (Cardiganshire) of *S. Tabernaemontani*; and var. *conglomeratus* Döll of *S. triqueter*. He also gives hybrids of *lacustris* × *triqueter* = *S. carinatus* Sm., and *Tabernaemontani* × *triqueter*, which I once described (*Rep. B.E.C.*, 68, 1924) as *arunensis* Druce. It is, however, pre-dated, as Mr Lousley shows, by × *S. Scheuchzeri* Brügger. He gives good descriptions of these and other possible plants from Britain. He lays stress on the glabrous glume in *lacustris* and the asperous one (especially near the midrib) of *Tabernaemontani*, which normally has two, not three, stigmas. He gives few particulars of the Formby habitat—the only British habitat besides the Channel Islands—of *S. americanus*, discovered by Mr R. E. D. BAKER (see *Rep. B.E.C.*, 762, 929, 1928), where it is quite plentiful over a small area.

747/2. ERIOPHORUM ANGUSTIFOLIUM Roth. The older authority is Honckeny Verz. Aller Gewachse Teutschl., i., 153, 1782 Roth's publication dates from Tent. Fl. Germ., i., 24, 1788.

758/3. Origin of SPARTINA TOWNSENDII. Ex Nature, p. 781, May 23, 1931. From its characteristics and the circumstances of its origin, Stapf (Curtis's *Bot. Mag.*, 152, Tab. 9125, 1926) and others have concluded that the cord or rice grass, *Spartina Townsendii* H. & J. Groves, must have originated on the foreshore of Southampton Water as a hybrid between *S. alterniflora* and *S. stricta*. The only objections to this have been raised on the ground that it is fertile and breeds true to type. Cytological study has shown *S. Townsendii* to have 126 chromosomes in its root-tip cells—nearly double the highest number previously reported in the Gramineae—and its putative parents have been found to have 70 and 56 respectively. These observations support the assumption that *S. Townsendii* is of hybrid origin and, further, they explain its fertility and its true-breeding behaviour. It is an allopolyploid similar to *Primula kewensis* and other recent experimentally produced plant species. *S. alterniflora* is generally considered to be an introduced species from America, while *S. stricta* is native. The hybridisation and chromosome doubling which have given rise to *S. Townsendii* occurred in Nature, without human agency, but yet in such circumstances as almost to approximate to experimental control. *S. Townsendii* has almost completely eliminated its parents wherever it has come into competition with them, and has spread very widely from its centre of origin. It emphasises the fact that one of the results of allopolyploidy is the maintenance of hybrid vigour, and is a striking example of the significance of hybridisation followed by polyploidy in plant evolution, as it seems to rise above the objections which have caused some authors to hesitate in their admittance of full specific rank to newly originated allopolyploids. C. LEONARD HUSKINS, Dept. of Botany, McGill University, Montreal, March 26.

777/7. PHLEUM MICHELII All. Fl. Ped., ii., 233, 1785. This name (teste Bercherer) is supplanted by the earlier name *Phleum hirsutum* Honckeny Verz. Aller Gewachse Teutschl., i., 183, 1782, G. C. DRUCE.

844/6. EQUISETUM PALUSTRE L., var. SIMULANS Druce, var. nov. Braunton Burrows, N. Devon, July 1931, G. C. DRUCE. Distributed this year (1931). Branching from the base, with many simple stems, variegated with black and pale greenish-yellow bands, it simulates *variegatum*, but has all the essential features of *palustre*. It is related to the var. *nudum*. It occurred in patches with *palustre*, and was plainly distinguishable from it, G. C. DRUCE.

868/1. AZOLLA FILICULOIDES Lam. This little alien continues to extend its range. The ditches round Lancing are covered with its vigorous growth, due to the contents of an aquarium being emptied. It has now made its appearance in Lewis Levels. Numerous attempts to keep the plant throughout the winter in an aquarium both in and out of doors have failed, and Mr A. E. Ellis tells me he has had the same experience. This is curious, seeing how exceedingly hardy the plant is in a state of nature. Some of the plants are a bright red while others remain green. I thought at first that this was a seasonal change, having only noticed the red forms in autumn. But the spring still showed red plants which continued throughout the summer. Mr Ellis seemed to think the red was due to shade. But this is not so, as most individuals found in Lewes were red where there is no shade. Only very few green ones showed. The possible number of plants in a pond 50 to 60 feet in diameter has been calculated as 380,000. J. G. DALGLEISH.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1931.

(*Owing to exigencies of space and the erratic receipt of foreign works this is necessarily incomplete.*)

ADAMS, J., M.A. A Students' Illustrated Irish Flora, being a guide to the indigenous seed-plants of Ireland. Pp. viii. + 343, tt. 578. Outline map of Ireland. L. Reeve & Co., 1931; 12/-. Illustrations and particulars of distribution of each plant, additional chapters on classification, relation to environment, topographical distribution, list of poisonous plants, and lastly the English and Irish names.

This enumeration of its contents may tempt some botanists to purchase this well-printed and well-illustrated work but, truth to tell, one is not able to recommend it. The omissions are numerous. There is no reference to *Utricularia Bremii*, only known from Ireland, nor to the purely Irish *Pinguicula grandiflora*. *Callitriche aquatica* alone is given. Of the pondweeds only *P. natans*, *densus*, *crispus*, *perfoliatus* and *pectinatus* are mentioned. *Fumaria capreolata* is the only representative of the climbing Fumariae and *officinalis* of the agrestal. No allusion is made to *Viola epipsila*, and *V. tricolor* is the only Pansy. Of *Juncus*—*squarrosus*, *effusus*, *articulatus* and *bufonius* are alone picked out. No allusion is made to the especially interesting Brandon Mountain and Co. Clare Saxifrages. Three sedges exhaust that large and interesting group—*remota*, *arenaria* and *pulicaris*. No allusion is made to *Scirpus triqueter*, and even the Twitch is passed by. The habitats are as loosely given. *Simethis*, " near the sea," is an unclear phrase, and is it *Sisyrinchium angustifolium* that is found " in bogs?" No allusion is made to the alien, *S. californicum*. *Habenaria conopsea* is found " in pastures." *Orchis latifolia*, of course, is given, but the true plant is unknown for Ireland, and *O. maculata* is found " in moist situations." *Spiranthes Romanzoffiana* occurs in meadows! There is only one *Cochlearia*. *Ulex europaeus* and *nanus* are given, but not the characteristic Irish plant, *U. Gallii*. *Potentilla fruticosa*, another characteristic Irish plant is said to grow in rocky or stony places. *Erica Mackayi* is not referred to. *Ajuga pyramidalis* is given for Aran Island, but it is not confined to it. Ireland seems to be deficient in Thistles as only *C. pycnocephalus* (in the strict sense it does not occur) is given. *Cirsium arvense*, *C. lanceolatum*, *C. palustre*, and *C. pratense* are given, but Hudson is not the authority for the last named. Is it not an exploded idea that the lower spiny leaves of the Holly have been evolved for protection against animals, while the upper leaves are spineless? One regrets that so much labour has been spent on a work which, by its arrangement and inadequacy, can never meet with a remunerative sale. One advantage in the book is the Benthamite pictures. There is not enough purely Irish work to attract the field-botanist. Why did not the writer try to illustrate Praeger's Topographical Botany following the sequence there given.

Aellen, Paul. Die Wooladventiven Chenopodien Europas. Verh. Nat. Gessel. in Basel, pp. 77, 1930.

- *Chenopodium album* L., var. *densifoliatum* Ludw., sub-sp. *argentina*. Rodleben, Zobel; Derendingen, Probst.
- *C. opulifolium* Schrad. Tweedside.
  - Forma *mucronulatum* Aell. Rodleben, Derendingen.
  - Forma *obtusatum* Aell. Rodleben, Derendingen.
  - Sub-sp. *petiolariforme* Aell. S. Africa. Derendingen.
- *C. giganteum* Don = *C. amaranticolor* Coste. N. India, Nepal. Lackalanga, Blom; Tweedside, Hayward, Rep. B.E.C., 637, 1928.
- *C. Probstii* Aell. Australia. Tweedside, 1913, Hayward and Druce, Adv. Fl. Tweed., 1919; Lackalanga, 1929, F. Ander.
  - Forma *lanceolatum* Aellen. Derendingen.
- *C. Zobelii* Ludw. Argentina. Rodleben, Derendingen, Solothurn, etc.; Tweedside, Hayward and Druce.
  - Forma *hircinifolium* Aellen. Rodleben, Derendingen.
  - Forma *multidentatum* Aellen. Derendingen.
- *C. leptophyllum* Nutt. America. Rodleben, 1910; Tweedside, 1911, Hayward and Druce, Adv. Fl. Tweed., 1919; Derendingen, etc.
  - Var. *Leptophylloides* (Murr) Thell. Roggwill, Derendingen.
  - Sub-sp. *desiccatum* (A. Nels.) Aellen. Montpellier.
- *C. Phillipsianum* Aellen. S. Africa.
  - Var. *Galpini* Aell. Kettwig.
  - Var. *Burtii* Aell. Derendingen.
- *C. Vulvaria* L. Tweedside, Hayward, etc.
  - Forma *rhombicum* Murr. Derendingen, 1916.
- *C. pallidicaule* Aell. Tweedside, 1913, Hayward and Druce.
- *C. urbicum* L. Derendingen, etc.
- *C. murale* L. Derendingen, etc., 1911; Galafoot, Selkirk, 1928, Hayward.
  - Forma *spissidentatum* (Murr) Aell. Derendingen.
  - Forma *latifolium* (Fenzl) Aell. Derendingen.
  - Forma *rubescens* Corb. Derendingen.
  - Forma *microphyllum* (Coss. & Germ.). Galafoot, 1928, Hayward.
- *C. polyspermum* L. Europe, Asia, Africa, N. Derendingen.
- *C. hybridum* L. Europe, Asia, Africa, N. Derendingen.
- *C. suecicum* Murr = *C. pseudo-opulifolium* (Scholz) Murr in Rep. B.E.C., 174, 1912, and Adv. Fl. Tweed. Rodleben; Galashiels, 1912, etc., Hayward and Druce.
- *C. hircinum* Schrad. S. America. Rodleben; Tweedside, 1913, Hayward and Druce; Bradford, 1917, 1921, Cryer and Druce; Derendingen, Aellen.
  - Forma *multidentatum* (Ludw.) Aell. Rodleben, Derendingen, Aellen; Bradford, Cryer. See Druce in Rep. B.E.C., 436, 1928.

Forma *deminutum* (Ludw.) Aell. Derendingen, etc., 1916, PROBST; Rodleben, 1907, ZOBEL; Port Juvenal, 1846, TOUCHY; Bradford, 1917, CRYER; 1921, DRUCE, etc.

Sub-sp. *angustatum* (Ludw.) Aell. Derendingen, etc.

Sub-sp. *crataeginum* (Ludw.) Aell. Derendingen, etc.

Forma *acutatum* (Ludw.) Aell. Derendingen, etc., 1917.

Var. *subtrilobum* (Issler) Aell. Derendingen, PROBST; Bradford, 1917, CRYER.

Sub-f. *erectum* (Ludw.) Aell. Derendingen.

Sub-f. *densum* (Ludw.) Aell. Derendingen.

Var. *latilobum* Murr in HAYWARD and DRUCE Adv. Fl. Tweed. = *pallidicaule.*

C. Berlandierii Moq., sub-sp. *Zschackei* Murr. N. and C. America. Derendingen, etc.

Forma *neglectum* Aell. Rodleben, ZOBEL.

Forma *angustum* (Ludw.) Aell. Rodleben, ZOBEL.

C. ficifolium Sm. Europe, Asia, Africa, N. Port Juvenal, 1852, TOUCHY; Gala-on-Tweed, 1912, HAYWARD.

Forma *subintegrum*. Rodleben, ZOBEL.

C. Quinoa Willd. Peru, Bolivia, Ecuador. Tweedside, 1915, HAYWARD.

Cf. sub-sp. *Milleanum* Aell. Tweedside, 1916, HAYWARD, as *C. paniculatum* in Rep. B.E.C., 51, 1917.

C. purpurascens Juss. Ouas, India, Siberia.

C. auricomiforme Murr. Australia, New Zealand. Derendingen, PROBST; Tweedside, HAYWARD and DRUCE, Adv. Fl. Tweed.; Bradford, 1918, Rep. B.E.C.

C. auricomum Lindl. Australia. Derendingen, PROBST.

Forma *subglabrum* Aell. Derendingen, PROBST.

C. triangulare R. Br. Australia. Bradford, 1919, DRUCE and CRYER (*C. paniculatum* Druce Br. Pl. List, 97, 1928); Derendingen.

C. stellulatum (Benth.) Aell. Australia. Derendingen.

C. Polygonoides Aell. Australia. Derendingen, etc., PROBST.

C. multifidum L. (*Roubieva*). Port Juvenal, 1846, TOUCHY; Rodleben, Derendingen, etc.; Tweedside, HAYWARD and DRUCE, Adv. Fl. Tweed., 202.

Forma *latisectum* Boule & Aell. Kettwig.

C. bonariense Haum. & Trig. Kettwig.

C. foetidum Schrad. Tropics and sub-tropical. Bradford, 1921, CRYER; Derendingen, PROBST.

Var. *intermedium* (O.K.) Aell. (*C. graveolens*, Adv. Fl. Tweed., 200, 1919, etc., non Willd.). S. Africa. Tweedside.

C. Ambrosioides L. S. America.

Forma *genuinum* Aell. Port Juvenal, TOUCHY; Rodleben; Tweedside, HAYWARD, Trans. Bot. Soc. Edin., 43, 1909; Derendingen, PROBST; Bradford, 1921, DRUCE and CRYER.

Forma *angustifolium* (Moq.) Aell. Kettwig.

Forma *suffruticosum* (Willd.) Aell. Port Juvenal, 1836, TOUCHY; Tweedside, HAYWARD and DRUCE, Adv. Fl. Tweed.; Derendingen, etc., PROBST.

Forma *dentatum* (as *C. vagans* (*C. chilense*), HAYWARD and DRUCE, Adv. Fl. Tweed., 200).

C. carinatum R. Br. Australia. Derendingen, etc.; HAYWARD and DRUCE, Adv. Fl. Tweed., 199, fig. 59; Bradford, CRYER.

C. cristatum F. v. M. Australia. Derendingen, PROBST.

C. holopterum (Thell.) Thell. & Aell. in Rep. B.E.C., 637, 1928. Australia. Tweedside, 1911, HAYWARD, as *carinatum*, in HAYWARD and DRUCE. Adv. Fl. Tweed.; Derendingen, etc., PROBST.

C. trigonocarpum Aell., nov. sp. New Zealand. Derendingen, 1926. PROBST.

C. inflata Aell. Australia. Kettwig.

C. atriplicinum F. v. M. Australia. Derendingen, 1927, PROBST.

C. macrospermum Hook. f., sub-sp. *halophilum* Aell. S. America. Tweedside, 1912, HAYWARD, as *C. ambiguum*; Lackalanga, etc.

Var. *subviride* Thell. & Aell. Rodleben, Derendingen, etc.

Forma *farinosum* Aell. Port Juvenal, TOUCHY.

Forma *latifolium* Thell. & Aell. Rodleben, etc.

Forma *angustius* Thell. & Aell. Derendingen, PROBST.

C. glaucum L., sub-sp. *ambiguum* (R. Br.) Thell. & Aell. Australia, etc. Derendingen, PROBST.

Forma *minus* (Moq.) Aell. Derendingen, PROBST.

C. rubrum L. Europe, Asia, Africa, N. America. Galashiels, 1908, HAYWARD.

C. capitatum (L.) Asch. Kettwig.

C. virgatum (L.) Ambrosi. Port Juvenal, TOUCHY.

Forma *minus* (Vahl) Aell. Herault, 1859.

C. antarcticum Benth. & Hook. Derendingen, PROBST.

C. myriocephalum Aell. Kettwig.

AGRICULTURE, THE FIFTEENTH INTERNATIONAL CONGRESS OF. Prague. June 1931. This handsome Catalogue is replete with fine photographs. The President of the Congress is Prof. F. Vladislav Brdlik, and the Secretary, O. Kadnev, LL.D. A fine likeness of President Masaryk forms the frontispiece. Particulars of the Republic of Czecho-Slovakia are given. The population in 1921 was 13,613,172, the ninth largest in Europe, whereas its area is only the fourteenth. Its density of population makes it rank as the seventh of the European States. 5,386,043 people are engaged in Agriculture. It is entirely inland. There are good maps and a mass of information regarding this very attractive country.

ARGENTINA, BULLETIN DEL MINISTER DE AGRICULTURE DE LA REPUBLIC. October-December, 1930. About 90 pages are devoted to a paper on Grape Cultivation, illustrated with excellent figures. Another good paper is on *Ustilago*. January-March, 1931, has a paper by A. R. Millan on the Solanaceae of Argentina, with a clavis to the genera. There is also a useful paper on Datos perra La Agrostologia Argentina and their nutritive value. The figures of the grasses are excellent. They include *Phleum pratense*, *Bromus Unioloides*, with six varieties, *Dactylis*, etc.

Bailey, L. H., and Zoe Bailey. Hortus. A concise Dictionary of Gardening, General Horticulture, and Cultivated Plants in North America. Pp. 652, tt. xvi. The Macmillan Company, New York, 1930; £2 2s. Well and attractively printed, this handsome volume comes as a welcome addition to our works of reference. This book is an annotated inventory of the species of plants and their main botanical varieties now in cultivation in the United States and Canada, outside botanic gardens, experiment stations, government test gardens, special fanciers' collections and gardens, together with brief indications of their uses and methods of cultivation. The nomenclature follows the International Rules of 1905 and 1910. Wisely they state that " names retain their original spelling and it is not allowable to modify the structure of either generic or specific names." So one uses *Tecoma* unhesitatingly although it is only part of the vernacular Mexican word, Tecomaxochitl, and it does not matter that *Agrimonia* is a corruption of Angemone, or that *Solidago* has only an irregular relation with the Latin *solidare*. We understand, they say, why Robert Brown used only one "t" in making the generic name *Mathiola*, and left out the second "l" in *Malcomia*. They should be spelled as they were originally written by Robert Brown. Nor can they regret that *Plumeria* was written to honour Plumier, *Mahonia* for McMahon, *Stranvaesia* for Fox Strangways. *Buginvillaea* honours De Bougainville. Jussieu and Commelin framed a Latin name and it should be written as they framed it, though subsequent writers have used ten different ways of spelling. Their choice of the word Hortus is happy, and is justified for such a work as it forms a worthy successor to the enormous volume of the Eystadt garden in Bavaria compiled by Besler in 1614. Linnaeus' " Hortus Cliffortianus " is a classic example, and Loudon's " Hortus Britannicus," 1830, worthily sustained the name. There is no other available word that quite so well covers the attempt to compile a descriptive document of the plants in cultivation, in a given time, place, or region. It contains 5,290 " captions," which are separate articles, 2519 genera, 12,659 species' names, 3987 synonyms and 3102 varieties. The total Latin binomials and trinomials number 19,748. Diphthongs are termed ligatured letters. The arrangement is alphabetical, and the setting up of each article is clear. For example—" *Centaurium* (*Erythraea*). Centaury. Gentianiaceae. Small mostly ann. herbs with opposite simple and entire leaves, and red or rose more or less pink-like bright flowers borne in capitula." Five species are given, including *C. pulchella*. This is how the American Pillar is described " H.W. (Van Fleet, 1902, introduced by Conrad and Jones, 1908) *R. Wichuriana* × *R. setigera* × Red H.C.). Flowers large, single, open, very lasting, slightly fragrant, crimson-carmine with white eye, golden-yellow stamens, followed by red hips in autumn, borne in immense clusters on long strong stems. Foliage abundant, large, rich green, leathery, mildews slightly. Growth very vigorous, 15-20 feet high, climbing; abundant bloomer in June. (Illust. in 1923 'Rose Annual,' facing p. 41; in 1924 facing p. 152). Illust. in this work, p. 113." Another example—" *Rosa Moyesi* Hemsl. & Wils. (Western China). Deep blood-red flowers about 2-2¾ in. across with grey anthers and brownish filaments. Beautiful foliage and strong growth, but difficult to establish. No other wild rose has stirred the imagination of rose-breeders so much as this. (Illust. in 1920 'Rose Annual,' facing p. 24; frontis. in colour in 1925 'Rose Annual.') Illust. in this work, p. 236." An allusion should have been made to its beautiful fruit and thorns. There is a most lovely plate of *Rosa spinosissima*—the simple beauty of a single Rose. One of the few misprints is on p. 232, where *Rosa hibernica Gravesii* should be *Grovesii*. A most useful list of Originators and Introducers of Roses is given as an appendix. But Francis Crépin is a Belgian, not a French botanist, and the name should be John Gerard, not Gerarde. Johann Hermann was a Leyden, not a German botanist. L'Obel was a native of Flanders, not France. George Prince is dead, but his descendants still carry on the business at Longworth, Berks. Regarding nomenclature, *Cirsium* is correctly used, *Cnicus* being limited to *benedictus*. *Epipactis* is restricted to *Goodyera*, and *Nephrodium* is rightly referred to *Dryopteris*. *Nymphozanthus* is used for the Yellow Water-Lily. *Limonium* = *Statice*, and *Statice* = *Armeria* is the correct way. *Ulmus campestris* has for synonyms, *U. sativa* and *U. procera*, and *foliacea* is used in the sense of *nitens*, but the Elm names are not on the surest foundation. The book teems with interest, and should be on the shelves of all American and most British horticulturists.

Bather, F. A., D.Sc., F.R.S. The Museum's Journal. The organ of the Museums Association. Duncan & Co.; 2/-. A useful publication which contains from the pen of our member, Mr H. A. Hyde, an article on Botany in relation to the small Museum. He gives an example of one of the Tables used in the Cardiff Museum, and shows what can be done in very small surroundings to illustrate each and all of the great principles of plant occurrence.

Beauverd, G. Polymorphisme de Quelques Plantes du Massif de la Vanoise (Savoie), in which a number of new varieties are described. Among them is *Carex microglochin*, var. *pygmaea*—only 5-7 cm. high. He also describes on p. 532 a variety of *Veronica agrestis* where the corolla has one lobe pale rose, while the three others are white—var. *Sallesiaca* Beauv., also *V. polita*, sub-sp. *leiocarpa* Beauv., with white flowers and glabrous fruit.

Beddows, A. R. *Triodia decumbens* Beauv. (*Sieglingia*). Ann. Bot., 443, 1931. He alludes to the well-known occurrence of grains in the old leaf-sheaths at the base of the stem, which Schroeter showed me over twenty years ago. Beddows gives them the name of "Cleistogene," and figures them. They are fertile while still enclosed in the sheath. Cleistogamous panicles are the ones that most usually occur.

BELGIQUE, BULLETIN DE LA SOCIETE ROYALE DE BOTANIQUE. Tome lxiii., fasc. 2, pp. 80. Brussels, 1930-31. There are obituary notices of M. L. Magnel, 1863-1930, a useful worker at the Taxonomy of Belgium, and of A. Hardy, 1846-1929, who did much work in Touraine. He had a large and good herbarium. M. Jean Houzeau de Lehaie has a paper on La Variation Orchidées Indigenes en Belgique. Of *O. mascula* he has three well-marked varieties. There is a comprehensive list of the Botanical works published in Belgium, 1928-1930, of observations on Orchids in Holland, France, and Italy. In France and Italy among 40 species noticed were *O. praetermissa* and *maculata*, and the fifteen Holland species also included *praetermissa*. He recognises in France two distinct " types majeurs " of *O. Morio*. Eight varieties of *O. latifolia* were seen in Holland, France and Belgium. M. Vermuelen gives a full description of *Orchis latifolia—O. latifolia*, *junialis* and *praetermissa*. but he gives a wrong colour for *praetermissa* " lilac plutôt pâle." The author does not seem to realise the frequent hybridity, and he says *Fuchsii* and *maculata* are joined together by a chain of intermediates. He also does not seem to realise the importance of soil influence.

BIOLOGICAL ABSTRACTS. A Comprehensive Abstracting and Indexing Journal of the World's Literature in Theoretical and Applied Biology, exclusive of Chinese Medicine. Union of American Biological Societies. 9 dollars. The author of *Athyrium alpestre*, says Prof. Fernald, is Ryland, not Mylander. Kenneth K. Mackenzie in Rhodora, 31, 119, 1929, follows my acceptance of the genus *Radicula* Hill vice *Rorippa* Scop.

BOSE, SIR JAGADIS CHUNDER. MOVEMENTS IN PLANTS. Pp. 211, tt. 80. Longmans, Green & Co., 1931; 18/-. Forming vol. vi. of the Bose Research Institute. The introduction is from the pen of Sir Jagadis in which he states that the ascent of the sap is not a physical process due to root pressure, but is essentially a physiological effect by the rhythmic activity of living cells throughout the length of the plant, in and from the absorbing root to the transpiring leaf. He clearly urges his reasons for adopting this hypothesis in Chapter X. on the Conduction of Impulse in Plants. It is a valuable contribution, supplemented as it is by papers by R. K. Dutt, N. N. Das, B. Palit, S. C. Das, and G. P. Das: N. C. Nag and H. N. Bannerjee contribute a paper on the Proteolytic Enzyme of *Carica Papaya*—a subject initiated by Professor Vines, who contended that there were two Enzymes, Peptase and Ereptase. This was denied by Prof. Wilstatter but these authors, although they have not isolated Ereptase, believe it exists. In a second paper they show that they were able to separate them by a Kaolin method. The " Movements in Plants " shows not only the fertility and industry of Sir Jagadis but also his magnetic power in stimulating the interest in his pupils who are actively engaged in handing on the torch which he has so effectively ignited.

BOTANIK ANTIQUARIATS KATALOG, 51. A very comprehensive catalogue of Botanical works from K. F. Koehler's Antiquarium, Leipzig.

BOTANICAL SOCIETY OF EDINBURGH. Transactions and Proceedings, xxx., pt. 4, 1931. Includes, Notes on Salt-Marsh Plants by Miss Moir and D. F. Stewart. The annual excursion of the Scottish Alpine Club is described by R. Moyes Adam, p. 326. Loch Laggan Hotel was the trysting place and Creag Meaghaidh, a wonderful hill, with its neighbour, Beinn Chaoruinn, were explored. They are both rich in alpine plants. Despite adverse weather the alpinists had a successful time. The alpine grasses *Phleum alpinum* and *Alopecurus alpinus* were both seen, but the members evidently were not out for critical species. The list includes a respectable number of alpines, including *Juncus castaneus* and *biglumis*. Was the latter really this rarity and not *triglumis*, which is not given, but which I saw there? Nor is there any mention of *Cerastium Cerastoides* (more abundant there than anywhere in Britain), *C. alpinum* × *vulgatum*, and *Saxifraga rivularis*.

BOTANISTS, INTERNATIONAL ADDRESS BOOK OF. Published for the Bentham Trustees by Ballière, Tindall & Cox, pp. 605, 1931; 12/6. A directory of Individuals, Scientific Institutions, Universities, Societies, etc., in all parts of the world interested in the study of Botany. Dr Diels of Berlin, Dr E. D. Merrill of New York, and Dr T. F. Chipp of Kew formed the Committee to arrange for the publication. Dr Chipp died suddenly on the eve of its completion. It contains Index of Countries, List of Abbreviations, List of Societies, etc., and a very comprehensive index of botanists. It is admirably printed and well arranged, and must prove of real service to any working botanist. The alphabetical list at the end of the book is a true blessing since any name can readily be traced. The geographical indices, too, are most serviceable. I have put it to a pretty severe test and the results have been most satisfactory. The reasonable price, compactness, and its well-ordered arrangement make it an essential book for every botanical Library.

BOWER, F. O., Sc.D., LL.D., F.R.S. SIZE AND FORM IN PLANTS. Pp. 232, fig. 73, tab. 25. Macmillan & Co., 1930; 12/6. This subject formed the theme of his Presidential Address at the Bristol Meeting of the British Association. Here we have it amplified and brought into the orderly arrangement so characteristic of Dr Bower. The scope is outside our Taxonomic side of Botany, but all of us congratulate him on producing so important a work which, to some extent, occupies a middle ground between the Physiologist who studies function, and the Morphologist who studies form.

BOYDON-RIDGE, W. T., B.Sc. THE FLORA OF NORTH STAFFORDSHIRE. Pp. 173, 1931. Issued as Appendices 1-8 to the Transactions and Annual Reports of the North Staffordshire Field Club, 1922-1929. We are glad to receive this long promised volume on which Mr Boydon-Ridge has spent much labour, especially as it promises to be a prelude to a complete Flora of the county. The boundary line between North and South Staffordshire is not given in detail, but appears to be a line drawn across the county east and west, north of Stafford. From this area it appears that 997 species have been recorded, besides 150 varieties, an estimate not easy to follow. It seems that Bagnall's list included 963, including varieties. It may be said that the figures cited on p. 149 are defective, through omitting the Cryptogams and Coniferae. Garney's list, which had many misnomers, had 779 plants. It is not clear that the 1105 plants cited, including varieties and hybrids, are for the whole of the north of the county. The notes on the Flora are interesting, and might well be extended, especially for the mountain-limestone area. So too, are those of the six Natural History Provinces (with an annexed map)—1, Lowland. 2, Tableland. 3, Coalfield. 4, Churner valley. 5, Mountain-limestone. 6, Sub-alpine, reaching to 1658 feet in the Roaches. The rivers are briefly described. Their drainage systems might be adopted for the divisions of the new Flora, namely, (1) Trent, (2) Severn, (3) Weaver in the northern area. There is a short Bibliography and list of the workers at the Flora. In the literature, the B.E.C. Reports, which contain some hundreds of Staffordshire records, find no place. The Flora proper occupies 130 pages. Unfortunately the synonyms are printed in the same large Roman letters as the species. This, with the awkward breaking up of the name, gives an unpleasing appearance to the page. From 60 to 100 species are errors, and these should have been either relegated to a place at the end or bracketted. Needless to say they are in the same type as the native species. Some of these should be sent to limbo—*Cerastium tetrandrum*, *Geranium sanguineum*, *Trifolium agrarium*, *Lathyrus palustris*, *Callitriche autumnalis*, *Apium repens*, *Carum Bulbocastanum*, *Erigeron alpinum*, *Arctium Newbouldii* (twice), *Centaurea aspera*, *Sonchus palustris*, *Primula elatior*, *Echium plantagineum*, *Althaea officinalis*, *Galeopsis dubia*, *Atriplex Portulacoides*, *Rumex longifolius*, *Aceras*, *Damasonium*, *Juncus biglumis*, *Potamogeton filiformis*, *Carex Oederi*, *Festuca sylvatica*, *Brachypodium pinnatum*, *Dryopteris uliginosa*, *D. aemula*. Mr Boydon-Ridge has yet remaining many local species to tempt the botanist. *Draba muralis*, *D. incana*, *Hutchinsia*, *Silene nutans*, *Rubus saxatilis*, *Ribes alpinum*, *Cicuta*, *Galium pumilum*, *Valeriana pyrenaica*, *Doronicum Pardalianches*, *Cirsium* (not *Cnicus*) *heterophyllum*, *Crepis paludosa*, *Hieracium anglicum*, *Campanula latifolia*, *Andromeda*, *Vaccinium intermedium*, *V. Vitis-Idaea*, *Oxycoccos*, *Pyrola rotundifolia*, *P. media*, *Polemonium*, *Symphytum tuberosum*, *Limosella*, *Utricularia minor*, *Galeopsis speciosa*, *Rumex maritimus*, *Daphne Mezereum*, *Habenaria albida*, *Crocus nudiflorus*, *Gagea*, *Elisma*, *Cladium*, *Calamagrostis lanceolata*, *Melica nutans*, *Hymenophyllum*, *Asplenium viride*, *Equisetum hyemale*. These make a good show. We congratulate Mr Boydon-Ridge on this goodly instalment. In the new Flora I plead for its divisions into river areas, for the inclusion of the published data, and especially for a due notice of Plot's "Natural History of the County." The book suffers much from its get up.

British Association for the Advancement of Science. Centenary Meeting in London, September 1931. President, Brig.-Gen. The Rt. Hon. Jan Christian Smuts, F.R.S., Prime Minister of S. Africa, 1921-1924, whose address, given in the Memorial Hall, Westminster, was worthy of himself and of the occasion. Two Handbooks were issued, one, London and the Advancement of Science, by various authors, pp. 321, 1931. The introductory survey is by Dr Allan Ferguson. Special mention is made of William Harvey, 1578-1657, and of Bacon. Sir C. Wren also receives due notice. The account of Henry Cavendish is good. Dr Wollaston, 1766-1828, was closely related to the Royal Society, as Secretary and President. I have a letter of his announcing the discovery of a new element—Palladium—and of the somewhat harsh criticism which it evoked. John Hill is said to have earned a place in the list of London's scientific worthies and receives less abuse than usual. The account of him is extremely able and not without a strain of humour. The writer quotes against Hill:—

"Thou essence of Dock and Valerian and Sage
At once the disgrace, and the pest of this age,
The worst that we wish thee, for all thy damn'd crimes
Is to take thy own physic and read thy own rhimes."

There is no doubt that his selling these remedies made him deadly enemies among the medical profession. He was rejected as a member of the Royal Society, but his review of the works of the Royal Society of London was a fine piece of pungent criticism, though perhaps inferior to that of "English Bards and Scotch Reviewers." The account of the Royal Society is from the pen of Mr F. A. Towle. It first started in 1646 at the Bulls' Head Tavern in Cheapside. In 1660 it again settled in Greenham College, and Charles II. gave it a Royal Charter in 1662, and a silver-gilt mace similar to that used in the Commons. The Library contains about 100,000 volumes. The Philosophical Transactions began in 1664 and continue to the present time. For special purposes a trust amounting to £600,000 has been formed; grants of £6000 for scientific purposes being made annually. Sir Joseph Banks, our Botanical Macaenas, was President for 41 years. The Patron is St Andrew. The Royal Society is the one great institution in this country which embraces in its purview the whole wide realm of nature, and elects into its ranks the most accomplished representatives of every department of science. The other leading Societies receive due recognition. Education in London is dealt with by Mr T. L. Humberstone. The fifth Chapter, by Sir Frank Heath, is on Government and Scientific Research. Sir Frank Dyson gives an account of the Royal Observatory, Greenwich, founded at the instance of Charles II. The first Astronomer Royal was John Flamstead, 1646-1719. Here it was that Halley discovered that the Comet he had seen had visited the earth 75 years earlier, and predicted its return in 1759. Maskelyne weighed the earth. Major Chipp gives an account of Kew Gardens, but the early history is not completely told. Sir Daniel Hall speaks of the John Innes Horticultural Institution. The Development of Medicine is told by Dr H. H. Bastford, and the very numerous (about eighty) Museums of London are enumerated by Dr F. A. Baker, but even this is not exhaustive, Tradescant's Museum was transferred to Oxford in 1682. Hans Sloane's Collection went to the British Museum, purchased for the inadequate sum of £20,000, which was raised in part by a lottery. The trustees include the Archbishop of Canterbury "chosen to overcome the scruples felt by some against the lottery." The Natural History Museum was completed in 1880, the architect being Alfred Waterhouse. Among the omissions appears to be that of the Hume Institute, which has large and valuable Botanical Collections. The whole of the very useful publication is contained in a small compact volume, fortunately not printed on earthy paper, so that it may last to the bi-centenary meeting, which few of us will see.

The second Handbook gives a retrospect of the British Association, 1831-1931, by the Secretary. Part of the cost was contributed by Sir Charles Parsons. The first membership ticket is illustrated as a frontispiece. Sir D. Brewster was among the prime movers in founding the Association, as is seen by the paper in the Edinburgh Journal of Science, B.S., Vol. v., 1831. The Mother Society was the Yorkshire Philosophical Society (of which one of our members, Mr H. J. Wilkinson, is the present Secretary), and it was in York that the first meeting was held under the Presidency of Earl Fitzwilliam. The next year it met at Oxford, presided over by Canon the Rev. W. Buckland, and in 1874 came the celebrated meeting at which Bishop Wilberforce received a knock-out blow from Prof. Huxley. It had been the writer's privilege to go to Nottingham to invite the Association to come to Oxford under the Presidency of the Marquis of Salisbury in 1894, when Lord Rayleigh showed him the tube of the new gas (Argon), then unnamed, and also to London with the Mayor to offer a similar invitation to the meeting which was presided over by H.R.H. the Prince of Wales, in 1926. The overseas meetings are well detailed, that in Australia being over-shadowed by the Great War, but it did not prevent some of the science savants receiving the Honorary Degree. The various scientific activities are well set out, and the handbook itself forms a most useful history of this important Association.

BRITTEN, JAMES, and G. S. BOULGER. A BIOGRAPHICAL INDEX OF DECEASED BRITISH AND IRISH BOTANISTS. Second Edition, revised and completed by A. B. Rendle, M.A., D.Sc., F.R.S. Pp. 342. Taylor & Francis, London, 1931. This eminently useful publication had the Preface for the first edition dated June 1, 1893. It was a model of conciseness and accuracy, and is invaluable to any student of British Botany and Botanists. It is well not to discard the earlier volume since there has been much evisceration. Take, for instance, Dr Mavor. In this edition the point that he prepared a General View of the Agriculture of Berkshire in 1809 is overlooked, an omission all the more remarkable since it contains the first lengthy list of Berkshire plants, and the interesting fact that he was ten times Mayor of Woodstock. Appended are a few further omissions that occur to me. Under Berkeley, Rev. Miles J., reference should be made to Northants " Notes and Queries," and Druce Fl. Northants, cxvii., 1930. Reference might have been made to the set of paintings made by Johann Sebastian Muller, which he made especially for Queen Charlotte and which are now preserved in a satinwood cabinet in the Royal Library at Windsor Castle. Ansell, John, his Herbarium came to me through the kindness of Mr Gambier-Parry. To Ashmole, Elias, and his copy of the " Phytologia Britannica " with many MS. notes in the Bodleian Library, reference to Fl. Berks might have been given to show what they were. Baker, Anne Elizabeth, wrote a Glossary of Northants Words, two vols., 5000 references—many botanical; see Druce Fl. Northants, lxxxix. Bauer, Ferdinand, 1000 paintings of the " Flora Graeca " at Oxford, and 131 sepia drawings of the places where the plants were gathered, Hb. Druce. Cape Bauer on the Australian coast is named after him. He resided for eight months on Norfolk Island. Allman, G. J., *Linaria sepium*. Baxter, Wm., Fl. Berks, clxii. Blackstone, J., Druce in Watney's Hist. of Cornbury. Browne, Rev. W., Rep. Ashmolean Nat. Hist. Soc. and Druce Fl. Oxf., ed. ii. lxix. Boswell, H., Mosses in Fl. Oxford, 1886. Bulkley, Edward, see Morisonian Herb., 199. Danvers, Henry—Earl Danby. Watney, V., Cornbury Park. Macnamara's Memorial of Danvers Family, 1815. Delany, Mary, Druce Fl. Bucks, lxxxix., and Masters Hist. and Antiq. of Naseby, 29, 1792. Don, George, Rep. Pharmaceutical Confer. at Dundee, 1902. Doody, Samuel, Field and Semple Chelsea Gardens. Fielding, Henry B., founded the Fielding Curatorship at Oxford. Garnsey Rev. H., gave new ceiling to Magdalen College Dining Hall. Gotobed Fl. Berks, cxlvii. Gosselin, J., discovered *Cicendia*. Henderson, Joseph for some time at Milton (G. Fitzwilliam) and there helped John Clare. Hobkirk, C., forms of *Crataegus*. Krieg, D., see Morisonian Herb. Hill, John, Makers of British Botany. Ingwall, Thos., c. 1844, discovered *Teucrium Botrys* at Boxhill, Ann. Nat. Hist., 1844. Joad, he gave the rock-plants which started the rock garden at Kew. Knowlton, Thos., *Sedum dasyphyllum*, Ray Syn., 1724. Lees, Edward, Corr. Memb. Bot. Soc., London. Macartney, Lord, 1737-1836, J.N.B., xxvii. Eastern plants at Oxford. Merrett, Pinax reprinted, 1667. Mill, G. G. Fl. Berks, clxix. Morgan, Edw., 3 vols. Hort. Soc., Bodleian Library Notcutt, W. L., Druce Fl. Northants, cxvii. Paley, Rev. F. A., Druce Fl. Northants, cxxi. Pamplin, Druce Fl. Oxf., cxiii. Pitcairn, A. Vita Morisonii, c. 1700. Pitt, W., Druce Fl. Northants, lxxxvii. Plot R., Druce Fl. Oxf., ed. ii., lxxv., *Ulmus Plotii*. Pitchford, J., Hudson Fl. Berks, cxlvi. Sowerby, J. de Carle, engraved plates for Sibth. Fl. Graeca. Stratton, F., plants in Hb. Druce at Oxford. Tyacke, N. *Alchemilla argentea* in Arran, sp. in Herb. at Oxford. Sim, J., *Botrychium*. Huntly, Marchioness of, M.A. Pegus, born Uffington, 1821, died at Orton, 1893. Herb. and paintings at Orton and Peterborough. See Vict. Count. Hist. Hunts, and Druce Fl. Northants, cxx. These come to one as one looks upon the well-filled pages, but the exigencies of space made it imperative to limit the matter. Another reason for the retention of the old volume is that a few names were included in the first edition which it has not been thought worth while to insert in the second. The selection of the names is extraordinarily good, and the masses of information accurate. How much has been done since the first appearance is shown by the figures of 256 pages in the earlier volume and 338 pages in this. We congratulate the editor on a good piece of eminently useful work.

British Museum (Natural History), Department of Botany. Exhibition of a Selection from the Historical Collections, for the fifth Botanical Congress, 1930. Pp. 23. London: Murray & Co. The Museum actually dates from 1753, Sir Hans Sloane's collection being purchased for £20,000. It contained a Herbarium in 33 large folios. It was removed from Montagu House, Bloomsbury, to South Kensington in 1881. Sloane's connection with Jamaica arose from the fact that he was Physician to the Duke of Albemarle and stayed with him in that island for fifteen months. The plants he collected there are contained in the first eight volumes of the set. Banks marked his species in an annotated copy of Ray's *Historia Plantarum*. They include a magnificent series of plants of the 17th and 18th century botanists. Banks went with Cook round the world, botanising in Labrador and for six months in Iceland. Solander acted as librarian and botanist from 1764, and went with Banks to Iceland. Banks was also assisted by Dryander, Robert Brown, and John Lindley. To Robert Brown he bequeathed an annuity and the use of his collections during his lifetime, when they were to go to the British Museum. A general view of its contents are given in this brochure, which also includes the chief collections up to date, but no allusion is made to Benbow's Buckinghamshire plants, of which he was so meticulously careful. A list of the exhibits is also included, but under Ferdinand Bauer there is no reference to the 1,000 unequalled floral drawings of his at Oxford, which were used in the *Flora Graeca*.

Buller, A. H. Reginald, F.R.S. Researches on Fungi. Vol. iv. Further Observations on the Coprini, together with some investigations on social organisations and sex in the Hymenomycetes. Pp. 330, tt. 149. Longmans, Green & Co., London, New York, Toronto, 1931; 21/-. "This volume, the fourth of its series, is divided into two parts. Part I. is devoted to the record of some further observations on the Coprini or Ink Fungi, while Part II. treats of problems connected with social organisation and sex in the Hymenomycetes, and particularly in the Coprini. In Part II., Chapter I., an attempt is made to elucidate the physiological advantages which accrue to the mycelia of Mushrooms, Toadstools, and other Higher Fungi through the existence of the numerous hyphal fusions which are so characteristic of them. It is these hyphal fusions which permit of various mycelia co-operating in the formation of fruit-bodies. In the final chapter of Part II. it is shown in detail that, in *Coprinus lagopus*, a diploid mycelium is able to diploidise an appropriate haploid mycelium. This discovery seems to provide a clue to the biological significance of conjugate nuclei. Incidentally, in the course of the work, it has been possible to calculate the speed of movement of nuclei derived from one haploid mycelium (or an appropriate diploid mycelium) along the hyphae of another haploid mycelium which the first mycelium is diploidising." Dr Buller is to be warmly congratulated upon the issue of so scholarly a volume, which is well printed and cleverly illustrated. Some of the printing is in Coprinus Ink.

CALIFORNIA UNIVERSITY, BOTANICAL PUBLICATIONS OF. These show a most healthy spirit of investigation, and include many valuable papers, but space only allows of a passing glance. Halperin on *Poa bulbosa*. Rarotonga Ferns, collected by H. E. and S. Thew Parks, by E. Bingham Copeland, include a new *Dryopteris, Athyrium,* and two Aspleniums. Miscellaneous oriental Pteridophytes include a new *Gleichenia* from Malay, a *Cyathea* from Samoa, another from Aneitum, and a third from Tonga. There are many others from New Guinea, etc. There are several plates. John Billing (153-170) has an important paper on Chromomeres of Liliaceous Plants.

CARDIFF NATURALISTS' SOCIETY, TRANSACTIONS OF. Vol. lxii., pp. 92, 1929; 10/6. A well-printed Report containing several interesting articles. Botany is not one of the strong sections. The address of the Hon. Librarian is the National Museum of Wales.

CAVERS, F., D.Sc., F.L.S. BOTANY FOR MATRICULATION. Revised by L. C. Fox, M.A. Second Edition, pp. 509. W. B. Clive, University Tutorial Press, High Street, New Oxford Street, London, 1931; 6/6. In this compact work the syllabus of the Matriculation Examination of the University of London is completely covered, and it will prove useful for school and other students, as well as for those who are interested in the examination of plants. It is well illustrated with 176 text figures. One of these is that of a compound microscope by E. Leitz, Wetzlar, but it seems wrong in these days of restricted business to recommend a foreign make. A very useful feature is the series of questions at the end of each chapter. On the ability to answer them is the test of one's understanding of the text. The treatment of the Families, which do not follow Bentham and Hooker's *Genera Plantarum*, is useful and practical. In the Rosaceae, etc., a short key to the genera is given. The cultivated species are enclosed in brackets. Capitals are not used for specific names in such cases as *Lathyrus Aphaca*. *Taraxacum Dens-leonis* is said to be an evergreen plant, since it is never without leaves. Although there is no mention of its extreme variability, there is much useful information given on the life history of the flower-head and of the individual flowers which open only for about three fine days of eight hours each; in wet or cold days they remain closed. The student is asked to test the various observations on the plant itself. Of the Hawkweed we are told some authors distinguish as many as thirty, others only four or five. We have over 260 in our List for Britain alone, while Zahn gives about 800 species, with some thousands of sub-species. Under the Thistle, *Cirsium* should be given as the name of the plumed Thistles. *Senecio Cineraria* might have been mentioned, as well as that increasing species, *S. squalidus*, under that genus. The habitat of *Solidago* is not confined to moist woods. The Orchidaceae is not included in the families, but a passing reference is given to *O. Morio*. The book can be strongly recommended for its general excellence.

CHARLES, VERA K. SOME COMMON MUSHROOMS AND HOW TO KNOW THEM. Pp. 60. United States Department of Agriculture, No. 143. For sale by Superintendent of Documents, Washington; 30 cents. A clear, concise account with key and forty-nine excellent illustrations. They are mostly British, species of a wide geographical range being selected for description.

COLVILLE, F. V., has been awarded the George Robert White Gold Medal of Honour, the highest Horticultural award in the United States. Dr Colville has studied extensively the Flora of the Rocky Mountains. Forty years ago he made the first botanical survey of the Death Valley, and he is the acknowledged authority on that region. He is the joint author of *Standardised Plant Names*, which gives authoritative names for 20,000 species and varieties in the United States. He is now Acting Director of the National Arboretum at New York. In experimenting on the growth of the Mountain Blueberry, he demonstrated the effect of cold in stimulating the growth of plants, and found that the Wild Crab, Cranberry Bush, Trailing Arbutus, etc., would not grow until they were chilled.

DANSER, Prof. B. H. Zur Polymorphie der *Polygonum lapathifolium*. Pp. 101-123. Nederl. Krindk. Arrd., June 1931. Bussy, Amsterdam. Prof. Danser accepts the name *lapathifolium* and does not mention *P. scabrum* Moench. He describes, as sub-species, *mesomorphum* = *lapathifolium*, var. *virescens* Gren. & Godr.; sub-sp. *lanigerum* R. Br. as species, Australia; sub-sp. *africanum* (Meisn.) Dans., Congo, Cameroons, etc.; sub-sp. *nodosum* (Pers.) Dans., Europe, Asia; sub-sp. *glandulosum* (R. Br.) Dans., Japan, Asia, Australia, Africa; sub-sp. *oligocladum* Dans., Rotterdam, adventive; sub-sp. *syringifolium* Dans., Nederlands; sub-sp. *tomentosum* (Schrank) Dans., N.W. Europe; sub-sp. *leptocladum* Thell., Europe. Nepenthaceae, Mitt. Inst. Alleg. Bot. in Hamburg, 217, 1931.

DREWETT, F. DAWTREY, M.D. THE LIFE OF EDWARD JENNER, M.D., F.R.S., Naturalist and Discoverer of Vaccination. Pp. 127, with portrait. Longmans, Green & Co., 1931; 6/-. In this pleasant little volume, Dr Drewett has brought together much of interest relating to Jenner, whose biography by John Bacon in two volumes appeared nearly a century ago (1838). Jenner was the third son of a clergyman living at Berkeley, Gloucestershire. His father died when he was five years old, and he was brought up with affectionate care and judgment by his uncle, the Rev. Stephen Jenner. At the age of eight he went to school at Wootton under Edge, and later to Cirencester. He developed early a taste for Natural History. Before he was nine he had made a collection of Dormice nests, and when at Cirencester a collection of Oolitic fossils. Later on he studied Pharmacy and Surgery at Sodbury. Then, when he was twenty, he came to London and was a pupil of John Hunter, who had a menagerie at Brompton. Hunter became a hero to Jenner and a life-long friendship resulted. In 1771 Capt. Cook returned with many specimens which had been collected for Sir Joseph Banks, including a mass of new plants dried and pressed. These were collected near Botany Bay, and Jenner was asked to prepare and arrange the specimens. This he did with such skill and care that Sir Joseph offered him the appointment as Naturalist to the next expedition. Neither this, nor a partnership with Hunter, was accepted, Jenner preferring to return to the country air at Berkeley. He cared not for the glory of London. "What is its reward?—at best a name. Praise—when the ear has grown too dull to hear. Gold—when the senses it should please are dead. Wreaths—the hair they cover has grown grey. Fame—when the heart it should have filled is dumb." Jenner loved his county and the country life. He is described as having "the generosity of a good man, the simplicity of a great one." In 1788 he married Catherine Kingscote. In 1793 his old friend and tutor died of angina pectoris, and in the same year Jenner nearly died from an attack of typhoid fever, the effects of which he felt for more than a year. Smallpox, at that time, was ravaging the country in its most loathsome form. Inoculation, introduced through the auspices of that remarkable woman, Lady Mary Wortley Montagu, was not successful, but was not officially discontinued till 1840. In 1752, no fewer than 3538 cases occurred in England. In Russia, one child in every seven died from it. Jenner had heard a servant girl say that she could not have Smallpox, for she had had Cowpox, and this led him to go into the subject. On the 14th of May (a day kept as an annual festival in Berlin) he obtained the lymph for a Cowpox cure and inoculated a healthy boy, which made him immune. In 1798 he issued a pamphlet of seventy pages with illustrations. This resulted in his being offered £10,000 a year and a house in Grosvenor Square. In 1800 he visited Oxford, and I have seen a letter relating to his inoculations which he practised there. Dr Drewett gives a mass of information relating to the increased use of the lymph. Over 6000 cases were sent to him from India alone. The Empress of Russia sent him a diamond ring worth £1500, but he made no attempt to enrich himself. The House of Commons voted him £10,000, not without some opposition. His fame was world-wide. In more recent days, with a milder kind of Smallpox, vaccination is not so popular, and is, indeed, distrusted by many. Even a Sunday School child, when asked why Moses was hidden in the Bulrushes, replied: "Because they wanted to vaccinate him!"

DRUCE, G. CLARIDGE, D.Sc., LL.D., F.R.S. THE COMITAL FLORA OF THE BRITISH ISLES. Being the distribution of British (including a number of non-indigenous) plants throughout the 152 vice-counties of Great Britain, Ireland, and the Channel Islands, with the place of growth, elevation, world-distribution, grade, chief synonyms, and first names by which the plants were recorded as British. Pp. xxxii. + 407. With an original coloured map showing the botanical vice-counties. Demy 8vo. T. Buncle & Co., Arbroath, 1932; 20/-. To members of the Botanical Society and Exchange Club, 15/-. Interleaved copies, 3/6 extra—all post free.

All the many well-wishers of the late Dr Druce will be grieved to know that this veteran British field-botanist passed away suddenly the day before this, his last work, was published. I had myself put off a visit to him only a few days before he died, as he complained of the cold. I remember that quite twenty years ago this valuable summary of British Plant Distribution was even then being built up, for he showed me a specimen of it on one of my visits to Oxford. All members of the Botanical Society and Exchange Club of the British Isles, of which Dr Druce was Honorary Secretary for so many years, had already much to be grateful for to the author of this work. He was undoubtedly better acquainted with the British Flora as a whole than any other British botanist, and this knowledge he freely placed at the disposal of anyone. He was always ready to help others. In this way he approached the subject of this notice well equipped with first-hand experience and knowledge, and was loyally aided by a large body of collaborators. The annual Reports which he compiled were full of new British or county records, in addition to containing valuable summaries of British botanical literature, or other publications bearing upon it, and useful revisions of genera, etc. It will be difficult to replace so active and skilled a worker as Dr Druce.

The present work is a summary of plant distribution in the British Isles, and thus includes the records of every local and county flora. Previously this information was scattered through a number of now rare and expensive works by Watson, Colgan, More, Praeger and others. It will serve to answer the question whether a plant found is new to a given county or not, and will thus act as a guide to one's own county as well as on one's travels to other areas. Dr Druce says in his Preface, "I trust this book will be the field-companion of many botanists, because it will enable them to see if the plant they gather is new to the vice-county. Many journeys will, I trust, the book make with you," and with graphic but rather pathetic poetry, he continues, "through long tramps up mountain glens, when Bracken gives place to Heather and the Pines disappear, by trickling rivulets on whose sides are *Saxifraga aizoides* and *stellaris* and *Epilobium alsinifolium*, leading up to the rocky cliffs on which grow *Saxifraga rivularis, Poa alpina, Cerastium Cerastoides, nigrescens* and *alpinum* and their hybrids, *Polystichum Lonchitis, Sagina scotica*, besides countless Hieracia. Or it may be your visit is to a village by the sea, above which towers a shapeless hill whose slopes are aglow with *Ulex Gallii*, amid which is the crimson-flowered *Boretta cantabrica*, and where *Erica mediterranea* gladdens the eye. Below one are trembling bogs in which lurk *Utricularia*, and then sea-wards there is a strip of emerald-green turf and yellow sands, offering *Arabis Brownii*, *Spiranthes spiralis* and deep crimson-flowered *Orchis pyramidalis*. Then there is the zone of the tawny orange fucus-covered rocks and the opalescent sea."

Following the Preface, in which the methods adopted are outlined, the reason for omission of some critical genera explained and his thanks to the friends that assisted him (of which he was never stinting) recorded, there is a useful Introduction of twenty pages, discussing broadly the various data that are given for each plant in the Comital Flora itself, which takes up 398 pages. The Introduction explains the mode and plant citation, and reasons for some inconsistency are explained. He notes, *en passant*, that this work brings up to date Clarke's "First Records of British Flowering Plants," in itself a valuable addition to our knowledge. In regard to many old records and segregates, the difficulty of citing distributional records has been largely overcome by commencing *de novo* and utilising the Reports of the Club—a mine of information—and the material of his own Herbarium of 200,000 specimens, passed under review by an army of referees (cited on p. x.). This Herbarium is being maintained by a bequest and contains many valuable acquisitions (pp. xi.-xii.), *e.g.*, those of Charles Bailey, A. Fryer (Potamogetons), George Don, Leefe, Sole, etc. Dr Druce then summarises usefully the work of that pioneer of British Plant distribution, Hewett Cottrell Watson (a portrait is given of him, as well as of Dr Druce himself in academic robes). He summarises the terms used by Watson in his "Cybele Britannica," the provinces and vice-counties, altitudinal zones, stations, the types of geographical distribution, adopting them, or with some modification in the present work. A summary of the scope of "Topographical Botany" is also given, that work of Watson's being "the basis of our Comital Flora." *Inter alia* a detailed statement as to one of the causes of the long feud between Britten, a former Editor of the "Journal of Botany" and Dr Druce is printed. There follows an interesting summary as to the census of British plants, and lists are given of those extinct, or of dubiae, and of those confined to Scotland, Ireland, Wales, the Channel Islands respectively. Then comes a summary of broadly ecological types, *e.g.*, Ericetal, Hydrophytes, etc., a short account of aliens (1800 being included) and their means of dispersal, a summary of recent additions and of those confined to certain counties. A table of vice-counties with their well-known numbers is given, illustrated by a folding map, provided, as Dr Druce gracefully acknowledges on the title page, by W. J. Patey, Esq. A bibliography and a table of the metric and English systems of measurements conclude the Introduction, which is a useful résumé of valuable information compressed into very small space.

As to the Comital Flora itself, it may be best illustrated by an example—the first:—

" CLEMATIS VITALBA L. Traveller's Joy. Old Man's Beard.
Septal. English-Germanic. Hedges, bushy places on calcareous soils, and chalky downs. South of Denbigh and Leicester. Climbing Shrub. 10-700 ft.
Europe, W. and C.; Africa, N.
Eng. 48 [31. H. 17. S.].
1-41, 45, 46, 50, 53, 55, 60, 61 [42-44, 51, 52, 54, 56-59, 62-67, 69, 70, 75, 77, 80, 82, 83, 85, 87-89, 97-99, 102].
[H—1, 2, 4, 5, 8-10, 12, 14, 18, 20-23, 26, 31, 37.]
Between Ware and Barckway in the hedges.—Turner Names, G.viij. back, 1548."

These records of distribution form the cream of the work, and are the result of a life-time's application to the study, for Dr Druce stated in his Preface that the subject attracted him in 1876. It is unnecessary to lengthen this notice by further citation from this part of the work; and I need only add in conclusion that it must be invaluable to all British botanists as a careful and, as far as possible, up-to-date and accurate summary of the distribution of the plants in every county in the British Isles. A. R. HORWOOD.

ECOLOGY, THE JOURNAL OF. Edited by A. G. Tansley, F.R.S. Vol. xix. 22/6 each number. Cambridge University Press. February 1931. This contains Supp. vii. British Empire Vegetation Abstracts. The Biotic Community, J. Phillips, p. 24. An Economic Aspect of Regional Surrey, C. R. Robbins—the areas of Crowthorne, Wormsley and Calne are beautifully depicted. Vegetation of the Long Mynd, a plateau 1400 ft., highest point 1696 ft., page 45. On the Peat Deposits of Moine Mhor, N. Argyll—the dominance of Pteridophyta, p. 59. Observations on some of the St Lucia Soils, C. W. Hardlaw, p. 63, with beautiful fern photographs. P. 102, On the Importance of some Mosses as Pioneers on our Unstable Soils, W. Leach. P. 136, The Ecology of the Ayreland of Brid, Isle of Man, E. J. Moore. Scottish Beechwoods, A. S Watt. The Boreal Hazel Forests and the Theory of Pollen Statistics, G. Erdtman, p. 163. The Standardisation of Descriptions of Plant Communities, E. J. Salisbury, p. 189. Obituary notice of C. E. Moss, p. 209. August 1931, with Supp. viii. British Empire Vegetation Abstracts. The Plant Communities of Table Mountain, R. S. Adamson, p. 319 Scottish Beechwoods, A. S. Watt, continued on p. 360. Altitudinal Distribution of Plants on the Crimean Mountains, p. 382. The highest mountains are 1500 metres, and that within eight kilometres of the shore, and the most beautiful of the blossoms are those of *Scabiosa caucasica*—Queen of all the Caucasian flowers. The Fenlands of Lough Neagh. Prof. J. Small. The average rainfall is said to be 30 inches. A limited experience would have estimated it at more. There is a useful map of Lough Neagh. I see no reference to either *Deyeuxia Hookeri* or *Carex polygama*. What is *Carex hirsuta ? = hirta*. Preliminary work on a new Biological Station, Lough Me, Co. Cork, Louis P. W. Renouf, p. 438. Studies on the Ecology of Wicken Fen, H. Godwin, p. 473.

Engler, A. Das Pflanzenreich. 97 Heft (iv., 252). Boraginaceae—Borraginoideae—Cryptantheae. Pp 236, tt. 159. February 21, 1931. 37 marks. A. Brand. In this excellent work Mr Brand has adopted *Amsinckia* instead of the earlier *Benthamia* Lindley, without assigning reason for his choice. Our *Lappula deflexa* (Wahl.) Garcke he names *H. tenella* Opiz. He also puts *Lappula deflexa* as *H. deflexa* Lehm. *Lappula minima* he transfers to the genus *Heleroearpyium* A. DC. and unites *L. Szovilsiana* F. & Mey with it. The well-known name *Eritrichium nanum* he restores, since Villars used the trivial in 1779, whereas the trivial *terglouense* A. Kerner was not used by Hacquet in 1782. He divides *Benthamia* (*Amsinckia*) thus:—

Interior face of nutlet keeled, sepals always three, nutlets 1½-2 mm. long, ± reticulately rugose, ... *hispida*
Leaves linear, nutlets distinctly rugose; corolla a little longer than calyx, ... *intermedia*
Corolla twice the length of calyx, ... *spectabilis*
Nutlets scarcely rugose but unscaled or corrugated—
  a. Apex acute or setiform, corolla 7-9 mm. long, ... *Menziesii*
  b. Apex obtuse, punctiform, nutlets corrugated, immarginate, corolla 5 mm. long, ... *parviflora*
  c. Nutlets scarcely corrugated, fuscous, ... *Lycopsioides*

Etude de la Flore Adventice du Havre et des Environs. Soc. Linn. Seine Maritimes. Raoul E. Mail, January 1932. Includes an interesting list of adventives, of which *Balanites aegyptiaca* Delile seems to be new to Europe.

Fisher, Canon Robert, M.A. Flowers of Grass. How to Know the Names of the British Grasses. Pp. 47, tt. 28. Wheldon & Wesley. 1931; 2/-. A foreword is given by Mr Rayner. A long list of abbreviations is supplied as well as an explanation of the terms used. Keys are arranged by (1) spike and panicle, (2) awns, (3) flowers. The List of the British Grasses follows. Rayner's Catalogue is called the Standard Catalogue, and for the Latin name, the British Plant List, Ed. 2, is used. *Bromus interruptus* is not included, nor are *Calamagrostis scotica*, *Glyceria plicata*, *Poa irrigata*, etc. This cheap little work doubtless will be the pocket companion of many of our members.

Flintoff, R. J. Natural History Notes. Naturalist, February, March, April 1931. *Sambucus Ebulus*, Thomson Dale; *Epilobium nummularifolium* in N.E. Yorks near Glarisdale, etc., a New Zealand plant of garden origin.

Flora's League. The Society for the Protection of Wild Flowers, Ferns and Trees. Annual Report, Sir W. M. Abbot-Anderson, C.V.O. A delightful foreword by H. E. Salt is given. The Report bears evidence of the activities of the President and members. People desirous of joining the Society should write to the secretary, c/o the Council for the Preservation of Rural England, 17 Great Marlborough Street, London, W.1.

Flora of Surrey, being an account of the Flowering Plants, Ferns, and Characeae, with Notes on the Topography, Climate, and Geology, and a History of the Botanical Investigation of the County, by **Charles Edgar Salmon**, F.L.S. Edited by William Harrison Pearsall. London: G. Bell & Sons, Ltd., 1931.

The County of Surrey has probably been more thoroughly explored by field botanists than any other area of similar size in the British Isles. From the time of the early herbalists to date diligent and numerous workers have recorded their discoveries, so that the compilation of an up-to-date and exhaustive flora has become annually more difficult and yet more necessary. The present work is, therefore, extremely welcome, as it co-ordinates an immense number of records not otherwise easily available and renders the further investigation of the County Flora much easier.

The last *Flora of Surrey*, largely compiled from the manuscripts of J. D. Salmon by J. A. Brewer, was published in 1863 and enumerates 984 species out of a total of 1566 then known for Britain. This work, produced at a time when an era of very active field botany had just commenced, soon became hopelessly out of date, and about 1867 the late Arthur Bennett, and later W. H. Beeby (in 1884) took up the preparation of a new County Flora. W. H. Beeby's Flora reached a high degree of preparation, and doubtless when he handed over the MSS. to the late C. E. Salmon in 1908 he anticipated that a Flora would be published before many years had elapsed. But Salmon was far too painstaking and thorough in all his work to be satisfied even with the excellent materials at his disposal, and he delayed publication in the hope of finding more time to devote to the work of making it as complete as present knowledge would allow.

In 1920 printing was commenced and the first 550 pages of the Flora were printed when the author suddenly passed away on January 1st, 1930, and all hope of completion seemed lost. After a lapse of some months Mr W. H. Pearsall was approached and consented to edit the remaining genera and to carry the work through to completion. Judging from the volume as it now stands, it appears that the position at this time was that 550 pages were printed, about another 65 pages (to approximately the end of the Dicotyledons) were written up by Salmon but unprinted, and the remainder of the work, Introduction and Summary, were entirely unwritten.

Considerable condensation was necessary if the work was to be completed in one volume. Mr Salmon realised this well enough, for about four years ago he discussed publication in two volumes, though apparently he waited to see exactly how much space would be required before coming to a definite decision. Under such handicaps of space it is only to be expected that the second half of the work is quite out of proportion to the first and the result is a very unbalanced volume.

The Introduction comprises several excellent chapters written by various authors. The Topography, by Will. F. Taylor, is excellent, but in view of their importance, in defining the botanical divisions the account of the Rivers and Watersheds might with advantage have been more lengthy. The chapter on Geology by M. C. Crosfield is very good, but slightly out-of-date. The Botanologia, written by the late Prof. G. S. Boulger (who died in 1922), leaves little to be desired, except that it makes no mention at all of the work done by Surrey Botanists during the last twelve years.

The Plan of the Flora (pp. 57-63) is little more than a reprint of Beeby's account in the Victoria County History, with Bibliography added. The division into districts (ten in number) is based, as in many recent local Floras, upon the river basins. In the case of Surrey this arrangement is somewhat unfortunate. We find districts Xa and Xb separated by 4½ miles of district IIIa, united only as sub-divisions of the same district because they happen to form isolated portions of the catchment area of the Arun. Probably the remark on p. 63 that " the disused Wey and Arun Canal affords some good botanical ground " is somewhat out of date. We find the slopes of the chalk escarpment included in district V, whereas the summits are in districts VI and VIII. It is impossible to be certain of the boundaries of the districts for record purposes; for example, the boundary of Xa only follows any definite landmark (a road) in five cases and then only for a very short distance indeed. The old divisions in Brewer's Flora, though arbitrary, had at least the advantages that they were bounded by rivers, railways, and canals which could be noted in the field and closely approximated to the geological formations.

The first part of the Flora, as completed by Salmon, is carefully compiled and exhaustive, and, so far as it goes, is the most complete local Flora yet published in this country. He seems to have taken as his model the best of the recent Floras (such as White's Flora of Bristol, and Dr Druce's works on the Thames Province Counties). The only really serious criticism possible is that it is ten years out of date. Such recent introductions as *Lepidium Draba*, *Galinsoga parviflora* and *Senecio squalidus* have considerably extended their range during this period, and much more is now known of the distribution of the Pansies and other critical groups in Surrey. The bracketing of old localities where the plants mentioned are now extinct is obviously underdone. Even some of the old Battersea Fields rarities have been left unbracketed! But here Salmon erred, as always, on the side of caution, and he is careful not to assume that, merely because a district has altered or that recent workers have failed to find a plant in the locality recorded, the plant is extinct there.

A few plants have a status assigned to them which most Surrey botanists would probably strongly disagree with. Although the question of the status of a plant in the county must obviously remain largely a matter of opinion, the evidence does not always seem to be in favour of the view taken by Salmon. *Saponaria officinalis* (page 170) is given as "rare as a native by stream sides and on wood borders"—we would rather call it a long-established denizen. It was naturalised before Gerard's time, and it is therefore not surprising that it " looks native " in some of its stations. *Prunella laciniata* (p. 527) may be native on downs and pastures, as stated, but the question is decidedly debatable.

The notes, as one would expect, are very sympathetic towards rare or decreasing species, and in this connection the remarks on the Mezereon on page 572 are especially commendable. Yet it is rather surprising, after reading this outspoken paragraph, to observe recommendations to grow various plants in the garden such as *Genista tinctoria* (p. 225) and *Geranium pratense* (p. 210).

Those who had the privilege of knowing Salmon personally will remember him especially as a man who always seemed to enjoy life. They will be grateful for several spots of humour which remind us so vividly of the living man. Thus, on page 148, referring to *Lepidium latifolium*, which according to Capron was probably an escape from the Botanic Gardens on the other side of the river, Salmon says, " Details as to *how* the plant escaped the keeper and swam the river would have been valuable!" On page 123 he recommends a paper on *Barbarea stricta* to British "Barbareans." On page 255 a record given by Ray of *Lathyrus palustris* being found in Peckham-field, " in a squalid watery place," calls forth the comment that " the squalid conditions would not be difficult to discover!" *Mentha* (page 506) is described in a footnote as a " fascinating and sauce-providing genus." Such remarks, though perhaps not very good examples of humour, add considerably to the interest of the work.

A few new forms and varieties are described in the text of the Flora. We may instance *Galium Aparine* L., var. *pseudo-Vaillantii* A. Bennett; *Erica Tetralix* L., forma *latifolia*; *Lysimachia vulgaris* L., var. *angustifolia*; *Lamium album* L., forma *erubescens* Watson; and there are others. But Salmon was no believer in adding new names unless absolutely necessary, and there are no very startling innovations.

It is evident that the author intended to add an appendix giving notes on certain genera in which he took a special interest. Thus under *Polygala* (p. 165) a foot-note tells us, " For a key to the British species see Appendix," and the appendix is, of course, lacking. If the notes for the preparation of such additional matter are in existence, and are in anything like reasonable condition for publication, they should be made available, rather than that they should be lost to British Botany. Salmon knew so much, and yet comparatively published so little, that we cannot afford to lose any of his work which appeared on paper. The notes which appear scattered through the Flora are invaluable and will prove of great use even to botanists who may never have occasion to enter the county. The note on *Bidens* (pp. 383/4) is typical of many other good notes scattered throughout the pages completed by Salmon. They indicate how much we lost in *Carex*, a genus which he did not live to write up, but on which his knowledge was especially good.

The allocation of the localities to the districts is almost faultless, though in a few cases it is felt that one locality appears as two needlessly (*e.g.*, p. 396, *Senecio campestris* districts IIIa and IV). The work is singularly free from misprints—*Veronica serpyllifolia*, var. *rotundifolia* Schrank, has the initial "r" dropped on page 490, "vel" is printed "ve" in the 7th line from the bottom on page 445, and we find " interstinge " under *Euphrasia Rostkoviana* (p. 496)—no others were observed.

The second part of the work—the Monocotyledons (there is no heading to correspond with the one on p. 83), edited by W. H. Pearsall, can scarcely be compared to the portion completed by Salmon. Owing to the unreasonable limits of space, these last pages become little more than a catalogue in parts and entirely lack Salmon's valuable notes. Of many plants of rare or local distribution in the county no detailed records at all are given. This is especially noticeable in the genus *Carex*, where *C. strigosa*, *C. helodes* and *C. vesicaria* are dealt with by general statements and made to appear much more plentiful than is the case. *Galanthus nivalis* is given as "abundant" in three districts, which is certainly not the case. In two of the districts it occurs scattered along the banks of the Mole, whence it is recorded in Brewer, and here it has a semblance of being native. *Narthecium ossifragum* is "Recorded from every district, but very local and scarce in each "—it occurs by the acre in districts II and IIIa especially! *Luzula sylvatica* is plentiful in districts VI, VII, VIII, and IX, which is undoubtedly not so. Salmon was quite enthusiastic when he found a new locality for it in district VIII, and many workers would call it a most rare plant in the county—Brewer knew of only one locality! No Surrey botanist would be likely to call *Juncus compressus* Jacq. " frequent to abundant " in any district—certainly not in six districts as listed. Under *Lilium Martagon*, the Woodmanstone station is made much of, whereas the classic " Mickleham " station, where the plant still exists, is unmentioned. This locality appears in Brewer, and in Beeby's account in the *Vict. County Hist.* A recent record in print is *Rep. W.B.E.C.*, 1926-7, page 399. The writer has seen the Martagon Lily in this old locality in several very recent years in fair quantity. It is annually raided by motorists—apparently non-botanists—for decoration purposes. *Acorus Calamus* (page 615) is said to be a denizen (see also *Journ. Bot.*, ix., pp. 163, 246). Druce (*Fl. Berks*, 509) has no hesitation in giving it native status, and there seems very little positive evidence against this view. The Sweet Flag occurs in greater or less quantity along the banks of the Thames from Oxford to London and, if a denizen, it must certainly have been established for a remarkably long time—certainly before Ray's time.

There are two notable omissions in this part of the Flora of Surrey which was written up recently—no mention is made of *Bromus britannicus* I. A. Williams and *Equisetum occidentale* (Hy) Coste—the locality for which is given under *E. hyemale* on p. 659. The question of the status of this last plant is discussed in *Rep. B.E.C.*, 1929, 42-44. Here we may also draw attention to Wallace's record of *Vicia gracilis* Lois. (*Rep. W.B.E.C.*, 1927-8, 430), which Salmon later saw *in situ* and considered native. Although the editor decided against addenda we think this discovery so important as to deserve special mention.

There are a few misprints in the second part of the volume, noticeably Burford Bridge and Wimbledon Tark under *Setaria viridis* (p. 635); Vaun Pond and J. E. Bichens for Vann Pond and J. E. Bicheno (p. 637); and under *Glyceria declinata*, " nr. The Compass, Gomshall " for " Nr. The Compasses." But these are trivial errors, and for a writer not familiar with the county to get off with so few misprints is no mean achievement, probably due in no small measure to the excellent handwriting of both Pearsall and Salmon. In this part of the work, unfortunately, initials of recorders have been used in many cases which do not appear in the list of abbreviations and authorities on pages 68-80. Sometimes this is apt to lead to confusion. For example, on page 597 the initials H.W.P. appear under *Malaxis*—and on the same page there is a record by H. W. Page. Undoubtedly, H.W.P. refers to Mr H. W. Pugsley, but this may not be obvious to future generations. Similarly, on page 635, under *Panicum miliaceum*, an authority is given as "D"—probably Lady Davy is intended, but there is no key to this, and the fact that her name appears in full twice on the same page would seem to indicate that someone else is intended. *Epipactis palustris* is recorded from " Near Ham Ponds," an unlikely station. Can Ham Ponds, near Dover, where it still grows, be intended?

In spite of this criticism the second part of the volume is well done, and we are extremely grateful to Mr W. H. Pearsall for preparing the Flora of Surrey for publication, and so making the enormous amount of material collected by Salmon available for future work. It is a great pity that he is not familiar with the county—but to this fact, and to this alone, can the errors in general statements of distribution, etc., be ascribed. It must be remembered that the number of records is often a very poor indication of the abundance or otherwise of a species in the district (the Snowdrop, given above, is a good example of this), and that a botanist working from books and notes alone is at a great disadvantage as compared with those who have even slight field knowledge of the area dealt with.

The *Flora of Surrey* lacks a summary and comparison with neighbouring counties, which have been features of recent floras. Useful maps showing the botanical districts and Geological features are added, but it is to be noticed that the latter shows " solid " Geology, the far more useful " drift " maps not being available at the time of publication. Lt.-Col. Wolley-Dod adds " Revision of the Genus *Rosa*," bringing the Surrey records for this difficult group up to date. The frontispiece is an excellent photograph of the author engaged in his favourite pursuit, and there are eight other photographs scattered through the volume. Although the subjects of these are well chosen, they do not give a good idea of the vegetation and are pictorial rather than illustrative.

Throughout the pages we note numerous records by our members—Lady Davy, Mrs Wedgwood, C. E. Britton, J. Fraser, Lt.-Col. A. H. Wolley-Dod, H. W. Pugsley, and others, testifying to the excellent work which these botanists have done in the county. It is to be hoped that a supplement will soon be prepared, bringing the first part of the volume up to date and increasing the material published in the second part.

The *Flora of Surrey* is well printed and produced, though it is unfortunate that there are considerable differences in the colour of the paper, doubtless owing to the printing being done at different times. The binding is rather weak and has a tendency to wear white. C. E. Salmon and W. H. Pearsall have produced a volume worthy to rank among the very best of the British County Floras, a monument to indefatigable labour and everlasting care which it is easier to criticise than to emulate.

J. E. LOUSLEY.

GARDENERS' CHRONICLE, 1931. Price 6d weekly, or 30/- per annum post free. Edited by C. H. Curtis, F.L.S., V.M.H. (a portrait of him appearing on p. 2). 5 Tavistock Street, Covent Garden, London, W.C.2. There is a delightful series of papers on the Revelations of a Pocket Lens by Prof. Small. Kingdon-Ward's description of the Roosevelt Expedition to Indo-China, enriched as it is with good illustrations, is a very welcome feature. Mr N. E. Brown continues his descriptions—they seem inexhaustible—of the Mesembryanthemums. There is a portrait (p. 62) of Sir Arthur Hort. On p. 69 there is an account of the erratically published Genus, *Pinus*, by Lambert. P. 70, an account of Wicken Fen with good photographs, by H. S. Redgrove. He makes no reference to the small *Typha minima*. A note on Musk on p. 116, has many errors. Douglas discovered *Mimulus moschatus* in the Western Rockies, and the immense popularity of it we attribute to the merit of his discovery, but now in cultivation in Europe and in its native country, it has become practically odourless. Stubbs writes thus, "Douglas encountered an insignificant weed which had the, to him, familiar odour of the aristocratic scent. There may have been a single plant. All the musk-scented Mimulas may have descended from this freak, American gardens getting their stock from Europe." A travesty of facts, and a glaring example of horticulture as it ought not to be writ. One speaks of musk with some knowledge, as I have had numbers of musk-pods through my hands. The odd thing is that this loss of scent is equally true of N. American as of British-grown plants. P. 121, the Afforestation of the Culbin Sands. P. 212, an extensive and destructive heath fire took place in Glen Culbin when 2000 to 3000 acres were involved. P. 232, a memorial tablet to Sir Thomas Hanbury at Wisley is figured and described. P. 240, Asiatic Gentians. P. 241, on Henna, Rev. H. Friend. P. 262, some Antipodean Forms of *Myosotis*. P. 264, Review of Druce's "Flora of Northamptonshire," which enumerates 895 native, 77 denizen species, and 630 adventives, varieties and hybrids. P. 365, the Hon. Freedom of the Reading Town Council was conferred on Mr

Leonard G. Sutton, in May last. P. 365, *Ranunculus paucifolius* is probably one of the rarest plants in the world, being limited to a small hollow a few acres in extent, in the Southern Alps of New Zealand at about 2000 ft. altitude. It is a small plant 2 to 4 in. high, flowers 1½ in. in diameter, glossy golden-yellow. Only a dozen plants are now left. P. 468, fine photographs, and an excellent description of *Cedrus brevifolia* and *Quercus alnifolia* in Cyprus, by my friend, Mr C. W. James. P. 485, portrait of Dr G. Claridge Druce and an account of the presentation to him by the members of the Botanical Society and Exchange Club of the British Isles by Earl Buxton before a distinguished gathering. High Culture in Relation to Commerce—from February onwards, a valuable series of notices—Tobacco leads the field with its 15,000,000 pounds of leaves. P. 435, Home of *Alstroemeria Ligtu* in Argentina. 2/11 *Sequoia*, by A. Grove. First made known about 1852. Judge Fry measured the rings of 2000 fallen trees during the past forty years, and found that two were over 3000 years old, and 54 more than 2500 years. 2/33. The Hon. Vicary Gibbs was awarded the Gold Major Medal of the American General Association. 2/35. Polyploidy in Tulips, Sir A. D. Hall. 2/50. The loose illustration on p. 50 is a beautiful group of what is called *Orchis maculata*. It is, however, a cultivated race of my *O. Fuchsii*, itself perhaps slightly crossed with *maculata*, but it is not *O. maculata* L. 2/75. Foxgloves, garden of E. J. Russell, Harpenden, Herts. 2/62. Field of English *Valeriana officinalis* L. 2/134. Cultivation of Essential Oils and Drug Yielding Plants in Great Britain, H S. Redgrove. 2/174. Vitality of Seeds, A. Grove. The results are amazing. *Ambrosia elatior* only attempted one germination and that was in its 40th year. 2/214. *Lilium albanicum* Griseb., allied to *L. pyrenaicum*. 2/226. Botanists and Plants named after them, exhibited at Kew during the British Association Meeting. 2/313. Climatic Factors Governing the Distribution of Plants, W. B. Turrill. Arboreta and Botanic Gardens in the United States. 2/343. Portrait of Col. F. R. Balfour of Dawyck. 2/357. Plants for London Gardens. 2/362. *Anemone nemorosa*, var. *Robinsonia*, is much praised, and is said to have its origin in Ireland, but Baxter at Oxford had it in cultivation in the forties. 2/374. Marquis of Headfort. 2/390. Mr J. S. L. Gilmour appointed assistant Director of Kew. He added a rare species to Northants, *Galium anglicum*, and he now has the ball at his feet. 2/430, etc. Studies on Plant Breeding, A. C. Darlington. M. de Wildemann retires from the Directorship of the Brussels Botanic Gardens.

GENEVE, BULLETIN DE LA SOCIETE BOTANIQUE DE. Ed., Prof. R. Chodat. Vol. xxii., pp. 544, 75 cliches, 5 plates, 3 coloured, 1930; 20 francs. Includes nine able papers, one being by H. R. Oppenheimer on "Florula Transjordanica," with 13 vignettes and a biographical notice of Aaron Aaronsohn, the discoverer of *Triticum Dicoccoides* on Mt. Hermon. "He was," says W. C. Bullett of Vermont, "the greatest man I have known," and there is a most appreciative and able notice of him by Alex. Aaronsohn. A Bibliographical Index is also supplied. A most useful Flora of Palestine extends over 300 pages. Vol. xxiii., pp. 554, 1931; 22 francs. This fine volume is chiefly filled by a great work by M. Beauverd, "Recherches sur la flore vasculaire du Massif de la Tournette," 557, pp. 1-428. A most excellent Flora in every sense, it enumerates 1274 species, 150 micro-morphs, and 30 hybrids. La Tournette is in the neighbourhood of Annecy. The chronology of exploration begins with Allioni's visit in 1750, when *Ranunculus Thora* and *Campanula thyrsoidea* were among the plants gathered. The Abbé Puget visited it 1852-1866 and gathered many species. Our Swiss friend, L. Bouvier, worked there in 1865-1877, and a goodly list of workers' names is given. There is a copious Bibliography. Most excellent chapters on the Phytogeographia of La Tournette are given, which are freely illustrated. The number of species recorded is 1352. Switzerland has 2587, France 4700, Europe (Nyman) 9500, the World (B. & H.) 102,000 species. F. Chodat has an important paper "Essai d'Acclimitation de Céréales Natives dans un Village Valaisan situé à la Limite Supérieure de cette Culture."

Godfery, Colonel M. J. Monograph and Iconograph of Native British Orchidaceae. With 56 coloured plates from the paintings by Mrs Godfery. To be published by the Cambridge University Press. The work is arranged to show the thread of evolution from the primitive types to the more recent highly specialised forms. The wonderful floral structures are described and their insect visitors discussed. All the known natural hybrids growing wild in the British Isles are described and nearly all are figured. The work must be very costly. The subscription rate of £5 5/- may be sent to the Printer to the University. The price after publication will be raised to £7 7/-. On the Pollination of *Coeloglossum*, *Nigritella*, *Serapias*, etc., *Journ. Bot.*, 128, 1931.

Grieve, Mrs M., Whins Cottage, Chalfont St Peter, Bucks, has issued, at 9d each, several booklets describing herbs and how to grow them, which have some useful information in them. "Nettles and Dodders." It is quite true that the Roman Nettle is a doubtful native—one might say more, that it is an alien. It might have been well to say that it is practically extinct. "Belladonna, Bittersweet, Black Nightshade and Potato" form another one of the series, as do "Mullein, Toadflax, Veronicas." The Title page gives *Linaria hederacea*. *L. Cymbalaria*, it is presumed, is meant. It is found out that the blocks illustrating it in Gerard and Parkinson are put in upside down. Yet another is "Dandelion and other Composites," including Dahlia, from which a valuable principle was obtained in war-time.

Heslop-Harrison, J. W., D.Sc., F.R.S., and Dr K. Blackburn. A Preliminary Examination of the Morphology of the Somatic Chromosomes in Rosa. Proc. of Durham Philosophical Society, April 1931. They found *Rosa lutetiana*, var. *punicea*, to be diploid. *R. spinosissima* has two satellited chromosomes, and very possibly four. The paper is a preliminary to future study.

Hong Kong Naturalist. A Quarterly Journal. May 1931, 5 dollars per annum. It is well printed and illustrated, and contains many readable articles as well as a good account of the Kingfisher, with three coloured plates. There is a good paper on Tea, by S. Jenyns. One of the most popular teas in local restaurants is flavoured with Chrysanthemum, and others are scented with Rose, Orange, Jasmine, Gardenia and Azalea petals. Another interesting contribution is by Chia-jai Shen on Crabs, with figures. There is a Synopsis of Chinese Fish by H. W. Fowler.

Horticultural Society. The Journal of the Royal. Pp. clxxvii., 278, September 1931. As usual, this Journal contains many readable and valuable contributions, beginning with An Account of the Garden at St Nicholas, Richmond, Yorks, situate at about 500 ft. altitude. It is much cut up with walls and hedges. Standing on a steep wooded bank above the Swale, it was originally a monastic guest-house belonging to Easby Abbey, of which nothing now remains. Eight excellent photographs of the House and Garden show what beauties it contains, while the text gives a pleasing description of the methods used to maintain its beauties. " Lawns " are treated of by that expert, Mr M. L. Sutton. He says that lawns are usually composed of grasses which are simple or upright in growth, together with others of a stoloniferous or creeping habit. An American expert friend of mine preferred a lawn in which one only selected species is grown. In Britain there has been a tendency to exploit stoloniferous or creeping grasses, but Mr Sutton thinks they are only valuable in combination with the upright grasses. Our American friend staked his (ultimate) salvation and his (present) prospects on one only, the special species being *Agrostis capillaris* (*vulgaris*). *A. alba* is too coarse a species to make a really good lawn except at a great cost. One of the most important upright grasses is *Festuca rubra* (a very variable species), which is extensively creeping. *Festuca ovina* is another useful lawn grass. *F. tenuifolia* has shorter and finer leaves and grows on poor rocky soils. My experience is that it is a good soil-indicator, and is at its best on acid peaty soils. *Cynosurus cristatus* is a favourite with both the English and American experts. *Poa pratensis* is another good lawn grass, and it exists in several varieties; *P. trivialis* likes moister soils. A variety of *trivialis—septentrionalis* Druce, which grows in Zetland, has flowers 50 per cent. larger than the English form and produces a much larger amount of herbage, but it is unsuitable for lawns. *Lolium perenne* often forms a considerable percentage of lawn herbage. *Poa annua* is not altogether to be despised. I wonder grass-growers do not try the perennial or biennial form of it—I saw it this year in Orkney. Having made the lawn, rolling must not be forgotten as one of the agents to keep it in order, and a top dressing given. *Si opus sit.* Dr Baur of Munchberg gave the Masters' Memorial Lecture on April 8th. Mr G. W. Leak supplies " Paeony Cultivation," with a list of species. Mr E. A. Bunyard gives an account of John Wedgwood's garden, and Prof. J. Davidson contributes an excellent account of the Flora of British Columbia. Although there are now two towns in N. America named Vancouver, one in Washington, and a second, to which we all turn, in B.C., there is a third, a seaport town in Canada, which now covers 40 square miles, where 50 years ago there was no Vancouver. The timber has given the city its importance. Four species, *Pseudotsuga*, Sitka spruce, *Tsuga heterophylla* and *T. plicata*—the last, the Giant Cedar, grow extensively. The Skunk Cabbage, a yellow Aroid with a spathe two feet high and leaves four to five feet long and eighteen to twenty-four inches across, is a prominent object in the swamps. In bogs, *Kalmia polifolia* and the Labrador tea tree, *Ledum groenlandicum*, with their pretty white flowers, are frequent, and the two Smilacinas, *S. racemosa* and *amplexicaulis*, are ornamental species. *Linnaea borealis*, var. *americana*, takes the place of grass on wood-margins and roadsides. *Amelanchier* is pretty and common, and the fruit welcomed by the Indians. The most striking tree is *Cornus Nuttalliana*. I shall not forget seeing a tree of sixty feet high or more, covered with its showy large white blossom. The three Elders, the red, blue, and black, are showy plants. The Natural History Society is thriving there with its 300 members. Their excursions are limited to about fifty members, who camp out and have a most enjoyable time. There is a wealth of colouring in the scarlet *Castilleia*, blue, pink, and white Lupines, and the scarlet Columbine—a delightful species—I nearly jumped out of the railway carriage when I first saw it. Then by mountain streams are the large crimson-flowers of *Mimulus*, and the small golden-yellow flowered alpine species. There are Saxifrages galore, and the saxifraga-looking *Eriogynia pectinata*. Then there are the magnificent lemon and yellow flowers of *Erythronium grandiflorum*, and the Marsh Marigold whose flowers vary from white to mauve. Above 7000 ft. *Silene acaulis*, *Phlox Drummondii*, *Phacelia sericea*, and Pentstemons are common. In one season 400 species of alpines were collected. Such is the region which Prof. Davidson describes so well, and illustrates with such charming photographs. Gardening in London is described by Thomas Hay—a thoroughly practical and enthusiastic paper—and Cistus hybrids by Sir O. E. Warburg. Our member, Mr T. A. Lofthouse, gives a graphic account of his wanderings in Spain. He speaks with admiration of the curious *Sarcocapnos enneaphyllos* growing in rock crevices facing north. I once saw it on the steep face of the castle tower at Segovia, where probably the seeds were blown from the mountains of La Granja. It is a stimulating paper and Mr Lofthouse is to be congratulated on the excellent photographs of the scenery with which it is adorned. Arthur Batten contributes a paper on the Cultivation of the Tulip in Turkey. There is a photograph of the Honolulu church where the N. American explorer, David Douglas, is buried, and on which the Horticultural Society has placed a plaque. Nineteen pages are devoted to the additions to the Library.

HOUGHTON, A. D., M.D., Ph.D. THE CACTUS BOOK. With a foreword by N. L. Britton. Pp. 147, tt. 18. Macmillan & Co., New York, 1930; 10/-. The wonder and beauty of this bizarre family were first brought to my notice at Bronx Park, New York, by N. Lord Britton. Thanks to the munificence of Mr Carnegie, he, with Dr Bose, has produced four handsome volumes, selling at £20, describing the family. It was pleasing for me to see perched on a high ladder sketching one of the giant species a female artist who began her flower-painting in a Staffordshire china factory. These volumes drew attention to the beauty of many of the species, and led to their becoming popular with horticulturists. There are about 1500 species, divided into nearly a hundred and twenty-five genera. Therefore, this smaller and very portable book is likely itself to be popular and to increase the popularity of these (in many cases) easily grown plants. Dr Houghton gives especially valuable details for growing them from seeds or cuttings. But why bother with the spiny brutes, a person afflicted with Cactusitis is often asked. The answer is " the Cacti contain more and greater beauties of adaption than the Orchids, larger flowers than the Iris, and more beautiful colouring than the Rose." Some of the flowers of *Epiphyllum* measure a foot across. Even the spines rival the feathers of the Bird of Paradise, as in *Neomammillara plumosa*, while *Lemaireo cereua* Weber has its red and black dagger shaped spines eight inches long. But neither all succulent nor all prickly plants are Cacti, although all Cacti are succulent. Here is their definition—" It must have two cotyledons; the fruit must be a one-celled berry; the plant must have areoles whether it has spines or not; it must be perennial; the ovary of the flower must be below the insertion of the petals and sepals." There are three tribes —Pereskieae, Opuntieae, and Cerieae, which are divided into 125 genera. Each of these consists of one or more (sometimes hundreds) of species. About 3000 hybrids are listed. This popularity has led to a disastrous reduction in the native species. So, now, seed-raising is of the greatest importance, but they are long in germinating. Cutting and grafting are practically explained, and the important branch of cultivation, " watering," is carefully described. The Cristates and other monstrosities have a special chapter. A most valuable conspectus of species lifts the book to a high level of usefulness.

Howarth, W. O., and H. G. Chippindale. Note on the Biology of *Coryne Sarcoides* Jacq. and *C. umalis* Nyl. Trans. & Proc. Manchester Lit. and Phil. Soc., May 1931; 1/-.

Hurst, C. P. Natural History Notes round Great Bedwyn. Wiltshire Arch. and Nat. Hist. Mag., 279, 1931. Includes many flowering plants and a valuable list of Fungi, a few Hepatics and Lichens.

Hutchinson, J., and J. M. Dalziel, M.D. Flora of West Tropical Africa. The British West African Colonies, British Cameroons, the French and Portuguese Colonies south of the Tropic of Cancer to Lake Chad and Fernando Po. Vol. ii., pt. i., pp. 292, tt. 99, 1931. Crown Agents for the Colonies. Ericaceae to Lamiales, including the great family, Rubiaceae. Comprised in it are the genus, *Hutchinsonia*, founded by Robyns, and *Robynsia*, founded by Hutchinson. *Limosella tenuifolia* is kept as a distinct species.

Hyde, H. A. Welsh Timber Trees, Native and Introduced. Pp. 107. National Museum of Wales; 1/-. In this remarkably cheap and useful book Mr Hyde has brought together a mass of useful material. It was produced quite independently of Mr Gilbert Carter's book, of the preparation of which Mr Hyde was in complete ignorance. They are not rival works but are supplementary the one to the other. There are a large number of illustrations which materially add to its value, and these are in part due to generous friends. The principality has about 1500 species of plants, but only thirty-three are large enough to be called trees. There is an excellent introduction and a map showing the distribution of Welsh woodlands. In addition to the indigenous trees, space has been given to include some of the introduced species. In the Elms, owing to the wrong lead given by some authorities, *U. minor*, a name which should be given to the Cornish Elm, is used for another species. *Campestre* (sic) is a nomen confusum, and is certainly not accurately applied to the English Elm. There is a capital photograph of the Mamhilad Yew which measures thirty-one feet in girth, also of Larch which attains a girth of thirteen and a half feet, and grows to as high an altitude as 1250 feet. The Scots Pine shows a girth of ten and a half feet and reaches a height of 107 feet at Llanfilangel Court. At Stanage Park there are some Corsican Pines 117 feet high, probably the tallest in Britain. The Black Poplar reaches to 102 feet and eighteen feet in girth at Brecon. The figures and details of the Willows are exceedingly good. At Powis Castle there is an Oak 105 feet high and twenty-four feet in girth. It is a hybrid *Q. Robur* × *sessiliflora*. Under the Elms, the Guernsey Elm is not referred to. An Ash tree, 102 feet high, is in Dynevor Park. The Bibliography does not include the B.E.C. Reports where *Ulmus Plotii* (erroneously called *U. minor* in the text) is described. This little book will be found most useful to tree lovers—not only of Wales, but of Great Britain.

Irish Naturalist. Bi-monthly, 6/- a year. Vol. iii., 1931. Editor, J. A. S. Stendall, M.R.I.A., Deva, Haypark Avenue, Belfast. Phenological Observations, pp. 139-171, by J. W. Brunker and A. W. Stelfox. *Equisetum hyemale*, Glynn, near Skeagh Bridge in Antrim, Nora Fisher, p. 209. *Hieracium killinense*, Whitewell, Belfast. *Callitriche polymorpha*, Co. Clare, new to Ireland, Druce, p. 218. Coastal Survey of N. Ireland, Miss J. M. White, p. 233. Cork's Contribution to Natural History, Prof. P. W. Renouf.

Issler, E. Plantes Importées par L'Industrie Lanière. Bull. N.H. Colmar. Includes species of which *Martynia proboscidea* Glox. and *Harpagophyton procumbens* are figured.

James, W. O., B.Sc. An Introduction to Plant Physiology. Pp. 259, 1931. Oxford: Clarendon Press. "This book seeks to give a balanced account of the more elementary aspects of plant physiology. Recent research has been noticed, where fundamental principles are involved, but controversial matter has been as far as possible avoided. Experimental work is set out at the end of each chapter, the needs of small laboratories being kept in view. It is hoped that the book will meet the requirements of students of senior school or junior University standing." This is well arranged in eight chapters. The accepted name for the Marram Grass is *Ammophila arenaria.* Capitals are not needed for *Sagittaria sagittifolia*, or *Hypericum calycinum*, but are needed in *Prunus Lauro-cerasus* and *Corylus Avellana.* The account of Phytosynthesis, as is that of the Sugars and the materials which are formed from some of them, is excellent. The illustrations are numerous and good.

JENKIN, T. J. THE METHOD AND TECHNIQUE OF SECTION BREEDING AND STRAIN-BUILDING IN GRASSES. With a prefatory note by R. G. Stapledon. Pp. 45. Imperial Bureau of Plant Genetics. Bulletin No. 3. Agricultural Buildings, Aberystwith, 1931; 3/-. He finds by these investigations marked differences from the strain point of view between the plants resulting from ordinary commercial seed of a number of the more important herbage species, and those making a spontaneous or insom (=indigenous) appearance in prepared swards. Mr Jenkin supplies full details of his methods of working. In this Journal Mr Stapledon gives his results with *Dactylis*, and Captain R. D. Williams gives methods and technique of breeding Red Clover, White Clover, and Lucerne.

JOURNAL OF BOTANY, THE. British and Foreign. 1931. Edited by A. B. Rendle, D.Sc., F.R.S. 2/- monthly; 22/6 yearly. New Genera of Asiatic Mosses, H. N. Dixon, p. 1. Some Rare Plants of Scotland, M. L. Fernald, p. 8—so rare that *Eriophorum alpinum* and *opacum*, which he records for Kinlochewe, have evaded persistent search by Mr Wilmott, Mr F. Druce, Mr Corstorphine, Mr Chapple and myself! He also records *Antennaria dioica*, var. *hyperborea* from the Slioch. Obituaries, Ernest H. Wilson, p. 18, and an appreciative yet discriminating memoir of C. E. Moss, J. Ramsbottom, p. 20. *Limonium paradoxum*, H. W. Pugsley, p. 44, originally collected as *auriculifolia* at St David's Head, Pembroke, by E. F. Linton in 1905, and at Malin Head, Co. Donegal, by Hart in 1898. The variations of *L. binervosum* seem to be limitless. Two Botanical Excursions near London 1848, pp. 50 and 72. *Scrophularia alata* (as *Ehrharti*) was gathered at Charlton, Kent, and Battersea, Surrey. *Viola mirabilis* is recorded from Ashtead, Surrey. Is this correct? The *Parietaria erecta* is wrongly named. Obituaries of H. W. Monckton, p. 55; Thomas Hebden, p. 78; Prof. C. H. Ostenfeld, p. 79; F. B. Taylor, p. 103; R. Vowell Sherring, p. 104; Ignatz Urban, p. 105; Erik L. Ekman, p. 106; Spencer Le Marchant Moore, p. 134. *Juncus "alpinus"* in Teesdale, G. C. Druce. Gathered on Widdy Bank in 1903 and shown to Dr Lees in 1909. Dactylorchids of North Africa, Rev. T. Stephenson, pp. 134 and 177. The Schoenoplectus group of the genus *Scirpus* in Britain, J. E. Lousley, p. 151. The plants considered are 1. *S. lacustris* L., b. *fluitans* (C. & G. Husnot). Sheaths usually prolonged in a leafy blade, floating, often very long. This was noted in the *Flora of Oxfordshire*, 452, 1927, and seemed to be a state rather than a true variety. Also found in River Ouse, Bluntisham, Hunts, Rev. W. W. Newbould, 1846. The hybrid with *Tabernaemontani* is not yet known with certainty for Britain. The hybrid with *triqueter* =× *S. carinatus* (Sm.), Lousley points out that the reference in Ind. Kew for the name is preceded by *S. carinatus* Sm. E.B., t. 1983, 1809, which is given in my *Fl. Berks*. This is very variable. It is known for v.-c.s 2, 3, 16, 17, 21. There are specimens in Herb. Dillenius. 2. *S. Tabernaemontani* Gmel., b. *capitatus* Haussk. Spikes capitate, crowded, spikelets almost sessile forming a compact ball, Cardigan, A. Ley (Itchington Holt, Warwick, plants merge into type). × *triqueter* = *S. Kükenthalianus* P. Junge = *S. Scheuchzeriana* Brügger =× *S. arunensis* Druce (much antedated). Glumes asperous, stigmas usually two, v.-c.s 13, 15, 16. 3. *S. triqueter* L. Four varieties have been described—spikes with distinct elongated peduncle=(1) *vulgaris* Döll. Glumes reddish-brown, glabrous with green mid-ribs. (2) *Hoppii* Weihe. Spikelets mostly smaller; glumes purplish brown, asperous; spikes congested with quite short peduncles, often quite sessile. (3) *Lejeunei* Weihe. Glumes pale, greenish, dotted. (4) *conglomeratus* Döll. Peduncles usually slight; glumes as in type; anthers mostly truncate and mostly pilose. Lousley says much of our *triqueter* comes under this variety. V.-c.s 2, 3, 13, 15, 16, 17, 21; H. Limerick and Clare. 4. *S. americanus* Pers. Jersey, S. Lancashire. There appears to be no reference to the *Rep. B.E.C.* where the Lancashire station is first published. New Vice-County Records for North Country Mosses, A. Thompson, p. 163. Obituaries, H. B. Williamson, Dr Rudolph Marloth, p. 172. South-west Naturalists' Union, p. 193. On the excursion *Listera cordata* was seen at Dunkery. South-Eastern Union of Scientific Societies, p. 194. An excursion was made along the water-meadows below Winchester, the hybrid grass ×*Lolium festucaceum* being seen in plenty. British Veronicas of the Agrestis Group. E. Drabble and J. E. Little, p. 180 and 201. Var. *micrantha* Drabble in *Journ. Bot.*, 25, 1926, corolla 3 mm. or less, var. *Garckiana*, var. *Boraeana*. *Veronica polita* Fr. antedates *didyma* Ten. Under *V. persica* they give a key to the species and varieties:—

Sepals ovate, acute or subacute, A.
Sepals oblong obtuse, ... B.

A. Capsule with two turgid keelless lobes = *V. polita* (*grandiflora* is a large-flowered form).
  Capsule obreniform with two divergent compressed sharply keeled lobes.
    Plant ± stout, leaves sharply or simply serrate = var. *Aschersoniana*.
    Plant ± stout, leaves doubly and obtusely crenato-serrate = var. *Corrensiana*.
    Plant slender, leaves very small, simply dentate = var. *Kochiana*.

B. Capsule obreniform, with short crisped eglandular and usually some long glandular hairs = [*V. opaca*].
Capsule obcordate, with very long glandular and often some long eglandular hairs = *V. agrestis*.

Carex Notes, C. E. Salmon, p. 233. Among other notes he says Kükenthal rejects Marshall's ×*C. Ewingii*, which is only *saxatilis*. I had already queried it in my List. This is also true of Marshall's *intermedia*, which is only *panicea*. Kükenthal makes *C. Sadleri C. binervis*, var. *alpina* Drejer. I still think there are two plants, and I see no reason to delete *C. gracilis*, var. *gracilescens*. *Rubus argenteus* W. & N., f. *glandulosa* Barton & Riddelsdell, p. 238. Watson thought it was *alterniflorus* M. & L., see *Rep. B.E.C.*, 505, 1927, but Barton and Riddelsdell reject this and name it as a new species *R. cissburiensis*. V.-c.s 7, 12, 13, 14, 15, 16, 17. Field Notes, chiefly 1930, Rev. H. J. Riddelsdell, pp. 240, 309. Several have already been published. *Rubus nessensis* (as *suberectus*) King's Lynn, Miss Roper; *R. subcarpinifolius*, Falmer, v.-c. 14; *R. rusticanus* is included for 31 in my Hunts Botany. *R. egregius*, Woburn sands, Beds; *R. Newbouldii*, Streatley, v.-c. 22; *R. regillus*, Freeland, v.-c. 23, Druce as *fuscus*. It was named by Rogers. *R. melanodermis* Heythrop, v.-c. 23. Notes on Selaginella, A. H. G. Alston, a valuable paper. Obituary, Dr Percy Groom, p. 266. A New *Juncus* in Scotland (found by the Rev. E. S. Marshall), H. W. Pugsley, p. 278. " A distinct species, which will probably be reduced to the rank of a sub-species or variety of *subnodulosus* Wahlb." Buchenau already records it as forma *gracilis*. Congratulations to Mr J. W. White, Hon. M.Sc., Bristol, and Mrs White, on their diamond wedding, p. 248. South London Botanical Institute, twenty-first annual meeting on October 16, 1931, p. 248.

KEEN, BERNARD A. THE PHYSICAL PROPERTIES OF THE SOIL. Pp. 380; 2 plates, 93 figures. Longmans, Green & Co., 1930; 21/-. This is one of the celebrated Monographs on Agricultural Science. The author's object, he tells us, is to provide for those interested in agricultural science a connected and critical survey of our knowledge of the physical properties of the soil. At the same time, he trusts the book will serve to show his fellow physicists some of the attractive possibilities for research in a relatively unexplored tract of physics—the behaviour of moist porous materials displaying colloidal properties. The historical Introduction is a valuable adjunct and the nine other chapters form a very useful work. The historical part owes much to many illuminated manuscripts and tapestries. The straight-beamed plough is shown in the Bayeux tapestry, the later Luttrell Psalter of the fourteenth century exhibits a plough of a lighter type. Fitzherbert's volume of Agriculture, " The Boke of Husbandry," appeared in 1523. Jethro Tull's work is described as well as that of the chief agriculturists of the time. There is a useful Bibliography appended, and to the expert this highly technical text-book will be much valued. There is also a subject, as well as an author, index.

Kew Bulletin of Miscellaneous Information, 1931. This large volume testifies to the industry and botanical zeal of the staff of the Royal Botanic Gardens, at Kew. The papers include The Buttresses of Rain Forest Areas, W. D. Francis, p. 24. Suggested use as Buttresses as mechanical support, but Naviz (*Proc. Nat. Ac. Sciences U.S.A.*, xvi., 343, 1930) says that they are produced chiefly on the sides of dominant winds, and act as resistant cables. Francis's experience in the Australian rain-forests did not support this. Contributions to the Flora of Burma, C. E. C. Fischer. Notes on new or rare Hyperica, B. Stefanoff. *H. ovalifolium* is a new species. He alludes to the polymorphism of *H. Olympicum*, and names four varieties. Additions to the Flora of Borneo and other Malay Islands, H. N. Ridley, p. 45. Contributions to the Flora of Tropical America, iv. and v., p. 46, N. Y. Sandwith. Several new species are described as the result of a useful expedition to British Guiana. N. E. Brown, p. 61, gives some identifications in the Herbarium of Thunberg and Lamarck. *Abretia rigida* (Thunb.) Druce is included. On the distribution of the Golden Larch. W. R. Price, p. 67. C. V. B. Marquand, p. 67, describes some Asiatic Gentians (about fifty new species and combinations), besides *Sarretia Tara* T. A. Sprague. An Appendix Review of the work of the Royal Botanic Gardens, Kew, during 1930. General Index, 1919-1928, 2/-. The Flora of the Libyan Desert, W. B. K. Shaw. National Pinetum at Baddesbury. Fifth Quinquennial Review, N. Dallimore, p. 166. N. Y. Sandwith, p. 170, continues the Contributions to the Flora of British Guiana. S. African Plants, N. E. Brown, p. 191. Additions to the Index Kewensis, p. 199. Flora of Siam, Prof. Craib, p. 206. General Smuts' Botanical Expedition in Northern Rhodesia, p. 225, accompanied by Mr J. Hutchinson, and a young Oxford botanist, Mr J. B. Gillett. (Given as a Paper to Section K, British Association). 5200 specimens were collected by Hutchinson on his two African tours. Many new species are described and figured. Further Contributions to a Flora of Madeira, p. 257. The Loofah Industry, F. N. Hower, p. 266. It is the produce of *Luffa cylindrica.* Flora of Siam (cont.), Prof. Craib, p. 277. Introduction of Cinchona to India, p. 113. Researches on *Silene maritima* and *S. vulgaris*, p. 118, E. M. Marsden-Jones and W. B. Turrill. Eighteen variations are described. Strict plants are much more frequent on permanent pastures—All Cummings, Wilts; Bradfield; also in Kent, Surrey, Hampshire. Figured on plate viii. The variation in leaf shape is remarkable. That and other variations are figured. It is a most interesting and suggestive paper, but *S. vulgaris* is perhaps one of the least tenable names by which the Bladder Campion is known. Mr Sprague, however, can conserve it and then it will be all right. *Casuarina Distyla*, E. D. Marktin, p. 145. North East British Somali Land, C L. Collenette, p. 401. Arborescent Senecios of the Virunga mountains, A. D. Cotton, p. 289. The first of these was discovered by Sir Harry Johnston on Kilimanjaro, 47 years ago. More than six gatherings have been found. Some Poison Drugs, D. Thorpe, p. 299. We note *Stachys germanica* is used to relieve stomach trouble. *Silene maritima* and *S. vulgaris*, Marsden-Jones and Turrill, continued. Contributions to a Flora of Tropical America, N. Y. Sandwith, p. 357, continued. Researches on *Silene maritima* and *vulgaris*, continued, p. 391, gives an account of the projeny of many hybrids found at the Abbotsbury end of Chesil Beach. 66 forms resulted. The influence of *maritima* is on the whole greater than that of *vulgaris*. Obituary of Major Chipp, p. 397, 433. W. B. Turrill on the Flora of the Nearer East, p. 453. On p. 467, N. Y. Sandwith continues his Contributions on the Flora of British Guiana, one species—*Cephaelis Alstoni*—being named after our member.

Kew, H. Wallis. Ray's Journey through Lincolnshire, 1661. Transactions of the Lincolnshire Naturalists' Union. Pp. 167-174, 1930. Ray was then in his thirty-fourth year and on this journey he was accompanied by Phillip Skippon, afterwards Sir Phillip, and one servant. They left Cambridge on July 26, passing through Huntingdon and Stilton on their twenty-five mile ride to Peterborough. The Choristers made them pay for coming into the Cathedral with their boots on. The next day they passed through Crowland (six miles) with its fine Abbey and Bridge. Thence to Spalding (eight miles) they rode on a very firm bank. "The town is well built and handsome, such as no man would hope to find in such fens and peaty ground. On the thatched houses, House-Leek, is planted in great quantity." On July 27th and 28th, they stayed in Boston where "the church is very fair and great, the steeple, for a tower, the tallest that ever I saw, having 344 steps, the open lead lanthorn is 79 steps." On the 29th they took the road, thirty-four miles, to Spital Fen, ten miles beyond Lincoln, passing Tattersall Castle (now the Nation's property). In the park they discovered *Pneumonanthe*, which afterwards they found on many heathy grounds both in Lincolnshire and Yorkshire. Lincoln was a poor mean town with a beautiful Cathedral. On the 30th they went to Glanford Bridge = Brigg, ten miles, thence to Barton on Humber, six miles, and ferried over to Kingston upon Hull, five miles. Here they noticed great quantities of *Carum* which grows there, and in some places of the Fens of Lincolnshire. It took them from August 1st to 17th to reach Scotland, going as far as Stirling. They returned by Glasgow to Cambridge. At Pontefract he says the Licorice Plantation was the best in England. On the journey only four plants new to him were met with, and in Scotland not one. Mr Kew is to be congratulated on bringing this paper of Ray's to the notice of his fellow botanists.

Leicester, Transactions of the Literary and Philosophical Society. Vol. xxxii., 1930-31. The Presidential Address—more than usually interesting—was given by Mr W. K. Bedingfield on Monasticism and the Orders with an account of the alterations to the Leicester Abbey of St Mary of the Meadows. It was 140 feet in length, with a large cross aisle 100 × 30 feet. There is a personal note on Dr F. Bennett, a local geologist of repute, by Dr E. E. Lowe. Notes on Swiss Glaciers, with photographs, by B. Strachey. The annual report on Botany shows that its late energetic Secretary has gone to Stoke-on-Trent, his place being well filled by our member, Mr F. A. Sowter. His observations for 1930-1931 give some interesting localities. *Impatiens glandulifera* was seen in Rutland at Burrowden Quarries and *Ammi majus* at Knighton.

Lindquist, Bertil. The Ecology of the Scandinavian Beech Woods. Pp. 176-532, tt. 74, 1931, with Map. Akademisk Avhandling. The work of an ardent student, he has breathed the breath of life into, what might have been, an arid subject. It has excellent photographs, ably supplemented by his remarks. We are glad to see that he uses *Eupteris* and *Dryopteris* in their proper sense. The photograph of *Hordeum* (*Elymus*) *europaeum* is very good, as is that of *Asperula odorata* in a hundred year old beech wood. In the Chilterns it tends to become less patchy. *Allium ursinum*, on the other hand, is densely spread. The Beech wood at Farnham Common has a rich growth of *Leucobryum glaucum* which occasionally fruits there. The tables must have been a laborious task to prepare, but they materially add to the value of the work. The mapping of the country was not the least difficult of his tasks, the area involved being about 3000 square miles. Three years were spent on this work and by means of a plane (the Albatross) 2900 K. was travelled and 1500 square miles mapped. In Forests which have not been thinned for some years there is a decrease of *Anemone nemorosa*, and *Geranium rotundifolium* dropped rapidly in frequency as the light intensity became less. The really rich ground flora of the Chiltern Hills often coincides with very poor production types. The results plainly show that the flowering of the beech is directly influenced by the summer temperature of the preceding year. Intensity of heat is more important than duration. The Doctorate is well earned by Dr Lindquist. May he live long to continue his researches. *Lycopodium Chamaecyparissias* A. Br. och dess forhalland till *L. complanata*. Bot. Notiser, p. 90, 1929.

Linnean Society, Transactions of the, 1931. P. 261, An enumeration of the Angiosperms of the Seychelles Archipelago, by V. S. Summerhayes. It is the home of the Coco-de-Mer. The Flora of this group was enumerated by J. G. Baker in the Flora of the Mauritius and the Seychelles in 1877. In 1899, Schimper, Botanist of the German Deep Sea Expedition in the Valdivia, sent a number of plants from there to Kew. Hemsley contributed a valued paper in 1916 as a Supplement to the Journal of Botany and another in 1917 with W. B. Turrill. The results have been included in the present work. Summerhayes says the accepted Phanerogamic Flora numbers 480. There are 110 escapes from cultivation. The Cinnamon is one of these, and it now occupies large areas. 137 are weeds and waste-ground dwellers. 233 may be considered indigenous—a meagre number indeed. Eight of these are marine, ninety are endemic, a high percentage (39%), showing that the separation of this island group is ancient. Eighty-two per cent. of the species are found within the Mascarene group. The distance of the Seychelles to India is 1700 miles (a long journey for the Coco-de-

Mer), 1100 to Zanzibar, and 900 to Madagascar. A general study of the flora shows that it is distinctly Eastern—African genera 7, Mascarene 9, Asiatic 11. The same number of the Transactions contains the Flora of the Chagos Archipelago, by J. C. Willis and J. Stanley Gardner, based on the collections of the Percy Sladen Expedition.

LONDON NATURALIST, THE. The Journal of the London Natural History Society for 1930. Pp. 142. L. Reeve & Co., Ltd.; 3/-. A well printed and excellent Report on which this flourishing Society is to be warmly congratulated. The papers read to the Society were numerous and interesting. The finances are in good order. The President is L. S. Tremayne, Esq. *Oenanthe Lachenalii* was found in Middlesex in the Thames Marshes. The Plant Galls Section has been doing good work throughout the year. The President's Address was entitled "The Unseen Will." Mr Wm. Watson contributes his fourth learned paper on Brambles of Kent and Surrey. He has not seen *R. mucronatus* Blox. from Kent or Surrey, but he thinks he has *R. Banningii* from Eltham Park (v.-c. 16). He would put it in the group *foliosus*. He has not met with *R. apiculatus* Weihe in Kent or Surrey. He is inclined to refer a plant from Ryarsh Wood (v.-c. 16) to *R. retrodentatus* M. & L., which is new to Britain, as is *R. timendus*, var. *roseiflorus* Sudre, which Salmon recorded as *infestus* from Reigate. *R. Drejeri* in two forms, occurs near Guildford as forma *homoeacantha* F. & G., and from Dunster, Somerset, as forma *heterocantha*. There is a valuable paper (which has been issued as a separate volume) by T. H. Harrisson on the "Birds of the Harrow District."

LUNDEGARDH, DR HENRIK. ENVIRONMENT AND PLANT DEVELOPMENT. Translated from the second German Edition by Eric Ashby, M.Sc. Pp. 330, fig. 87. Edward Arnold & Co., 1931; 24/-. "In the four or five years which have elapsed since the first edition appeared, the realm of experimental ecology has been most extensively explored. Especially in soil science, microbiology, and the study of the sociology of plants, the output of literature has been immense. No more attempt has been made here than was made in the first edition to give an exhaustive review of the literature. The book is not intended as a handbook, but is rather to give the principles of a certain type of research. Despite the numerous additions to the literature, and a thorough revision of the text, the general structure of the book has been retained. Those aspects of the subject in which I have been particularly interested have been somewhat extended. By constant reference to the summaries of other authors, I hope to have attained some equality of treatment of the different fields. Restrictions of space have precluded a fuller treatment of the wide literature which deals with the practical applications of the subject in forestry and in agriculture. New text figures have been added, and two have been withdrawn. Since the two maps (omitted from the English Edition) are intended to give only a rough schematic outline, it has not been considered necessary to improve them."

McCandlish, Andrew C. A List of Wigtownshire Plants. Pp. 49, 1931. This is merely a list of names without localities. Naturally, considering the ignoring of my List (which appeared in the *Report of the Botanical Record Club* for 1883-4, when I noted 552 plants) by Bennett and Britten in the *Supplement to Topographical Botany* where my records are erroneously transferred to Newbould (who had never been in the county) the author simply cites them incidentally through McAndrew's later list of 1893. The List is clearly printed and commendably free from misprints, and it will be a handy volume for the pocket as one goes through the county. Varieties are not given, so *Vicia sylvatica*, var. *condensata* Druce, and *Melampyrum pratense*, var. *hians* Druce, which were first described from Wigtown are unnoticed, as is *Mentha longifolia*, var. *alpigena* Briquet. Other omissions are *Ranunculus peltatus*, *R. heterophyllus*, *R. pseudo-fluitans*, *Fumaria confusa*, *F. densiflora*, *F. Boraei*, *Cardamine flexuosa*, *Viola Riviniana*, *V. Curtisii*, *Polygala serpyllaceum*, *P. dubium*, *Raphanus maritimus*, first made known from the county, *Cerastium viscosum*, *C. semidecandrum*, *C. tetrandrum*, *Spergularia media*, *S. marina*, *S. rupicola*, etc., etc. *Ulex minor* is given. Does this really exist in the county? *Ulex Gallii*, which is plentiful, is omitted. *Medicago arabica* is given but not *denticulata*. Space will not allow allusion to further omissions, which are doubtless caused by taking so restricted a Flora as Bentham for the standard.

McFarland, J. Horace. Modern Roses. A uniform descriptive list of all important Roses in commerce, prepared for the American Rose Society. Pp. 284, tt. 38 coloured. The Macmillan Company, 1930; 21/-. About 10,000 named Roses have been brought into commerce within a century, but many of these are no longer obtainable and it was felt necessary to limit the work to those which could be obtained in 1930. The assistance given by the American Rose Association with its 5000 members was very great. The price of the work allows nothing for the very great cost of compilation and composition. The McFarland Company supplied, without charge, the coloured illustrations—some of those in sepia being indeed very beautiful.

McInnes, Latimer. A List of the Flowering Plants and Ferns of Kintyre. Typescript, pp. 19. These are based on his own observations extending over nearly fifty years in the southern part of the Peninsula, within a radius of ten miles from Campbeltown. Ewing's Catalogue (Ed. 2, 1899) includes the whole of the Peninsula and also the whole county southwards from the Crinan Canal to the Mull of Kintyre. The plants recorded in Prof. J. H. Balfour's Excursion in August 1844 are also noted. The records of Mrs Macalister Hall (of Killean) are also marked. The list includes *Thalictrum minus*, *T. majus*, *T. alpinum*, *Fumaria capreolata*, *Crambe*, *Teesdalea*, *Dianthus Deltoides*, *Cerastium atrovirens* (as part from *tetrandrum*); *Stellaria palustris*, "frequent;" *Claytonia*, *Radiola*, *Lavatera arborea*; *Althaea* ? rare; *Dryas* ?, *Circaea canadensis*, *Cicuta*, *Carum verticillatum*, *Oenanthe Lachenalii*, *Sambucus*

Ebulus, (*Solidago cambrica* is an error); *Senecio Smithii*, the Magellan species; *Lactuca muralis*, *Oxycoccus*, *Lysimachia punctata*, *Centunculus*, *Utricularia intermedia*, *Cuscuta Epithymum*, *Pneumaria*, *Anchusa sempervirens*, *Galeopsis speciosa*; *Polygonum maritimum*, an error for *P. Raii*; *Aristolochia*, *Hippophae*, *Sparganium minimum*, *S. affine*, *Zostera nana*, *Listera cordata*, *Orchis praetermissa*; *Habenaria chloroleuca* and *chlorantha*, these are identical, but the name to be used is *H. virescens*; *H. albida*, rare; *Cephalanthera latifolia*, is not this a misnomer for *C. alba?*; *Scirpus rufus* (appears twice); *S. cernuus*; *Carex rigida*, "common;" *C. aquatilis*; *Bromus arvensis*, common, is probably a misnomer; *Festuca Myuros* and *Bromoides*, these are identical; *Ophioglossum vulgatum*, and both of the Hymenophyllums. The plants included in this very useful paper are all in the vice-county 102. for which it contains some new records.

Marie-Victorin, Frere. *L'Anacharis canadensis*, Histoire et Solution d'un Imbroglio Taxonomique. Contrib. du Laboratoire de Botanique de l'Université de Montreal, No. 18, 1931. Here is presented another of Frère Marie-Victorin's important papers. The tangle which he says he has unravelled is the generic name to be used for the Canadian Water-Thyme. It will be remembered that Babington used *Anacharis* when he recorded it as British. The type specimen is in the Herbarium of Michaux at the Jardin des Plantes, Paris. He gathered it in his celebrated journey through Canada in 1791, and named it *Elodea canadensis* Fl. N. Amer., i., 20. Nuttall in the *Gen. N. Amer. Pl.*, ii., 242, 1818, imposed a new generic name for it—*i.e.*, *Udora*. Frère Marie-Victorin gives a full account of its introduction into Europe and its behaviour there. He also cites very freely the accounts given of it in British waters. He then deals with the "Invalidité de Nom Générique *Elodea* pour la plante de Montreal." *Elodea*: Fol. verticillata. Flos hermophroditica, Cal. subaequale, Stam. 3, Stig. bifida. *Anacharis*: Fol. opposita. ♂ Spatha bifida. Antherae 9, in fulcro communi. ♀ ignota species, fol. verticillatis forsan delegendae. Therefore, following Babington and Planchon, he reserves *Anacharis* for the dioicous plant of North America and reserves *Elodea* for the South American species with hermaphrodite and triandrous flowers. He then examines the objections against this change, but decides that the study of the Montreal plant permits one to adopt definitely and completely the restored name *Anacharis* for our plant—*Anacharis canadensis* Planchon Am. Sc. Nat. Bot., iii., ii., 75, 1849.

Marlborough College, Report of the Natural History Society, for the year ending 1930. Pp. 135; 5/-. Edited by the Rev. L. G. Peirson. In the Botanical Section it is noted that 534 species and varieties had been found, including *Rubus fuscus*, *Ophrys Sphegodes*, *Epilobium roseum*, as well as several varieties, and the hybrid *Viola Riviniana* × *silvestris*. The Report is quite an interesting one, attractively printed. On pp. 113-124, Mr C. P. Hurst supplies an admirable paper on the Fungi of the District, twenty-four of his own being new to the Marlborough Flora, besides five from other observers.

MESEMBRYANTHEMA. N. E. Brown, A.L.S., Dr A. Tischner, M.C. Karsten. Edited by E. J. Labarre. Descriptions, with chapters on cultivation and general ecology, in English, German, and Dutch. Pp. 323, with two coloured plates, and 180 illustrations. L. Reeve & Co., Ltd., 1931; 36/-. For many years past readers of the *Gardeners' Chronicle* must have been amazed at the number of species with which that great worker, Mr N. E. Brown, has continually enriched its pages. A large number of new genera have been described—a most unpopular thing to do. Dillenius, Haworth, and De Candolle, early workers on the genus, had been content to leave such an olla podrida under one generic name, now Brown has made many, perhaps too many. He told me when he studied the living plants he felt bound to make his elaborations. If one looks through this beautiful book, so well printed, so beautifully illustrated, and with such ample descriptions, one is bound to agree with him to a great extent. But I am for large genera with, when necessary, numerous sections, or sub-genera, since this saves the creation of many new names. In this work 188 species are described belonging to 41 different genera, not including synonyms. The showy species of *Carpobrotum—edule* (*aequilaterale*), so well known to us, is not included. A few years ago all the species described in this handsome volume would have been named *Mesembryanthemum*. This work gives 100 species and 200 species of the stemless or very dwarf species which are unnoticed in Berger's work. Linnaeus established the genus in 1753, and for long it remained unbroken, as it was practically unexamined. Even Haworth only separated a single genus, *Hymenogyne*. Mr N. E. Brown began their study in 1865. How thorough and painstaking his labours have been, this volume will bear witness. Dr Tischner gives an excellent chapter on their cultivation, and this is sure to lead to an increasing popularity for these bizarre creatures, especially as so many can be readily grown from cuttings. The illustrations are both numerous and excellent. The two coloured plates have a most attractive guise, for, although the plates are so tiny, yet the details are beautifully but not obtrusively given. Mr E. J. Labarre gives a pleasing foreword, from which we learn that many of the photographs were from his own set. Mr N. E. Brown supplies many of the beautiful drawings. The paper on general ecology is supplied by Herr M. C. Karsten, and is a valuable piece of work. The notes on mimicry are of great interest. Burchell, that great explorer, a hundred years ago, called attention to it as occurring in *turbiniforme* (*Lithops*), which looked like a pebble similar to those amid which it was growing and having the same varying colour. There is an interesting reference to wind-sowed plants. The volume is a distinct addition to Botanical Literature, and we heartily congratulate its "makers" on their success.

NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST OR OF NATURAL BEAUTY, THE. Report, 1930-1931. Pp. 154 with map. 7 Buckingham

Palace Gardens, Westminster, S.W.1. The Society has suffered an incalculable loss by the death of the able and genial Chairman of the Executive Committee, Mr John Bailey, who died on June 29th. The Committee appeal for £500 to complete the purchase of Bolt Tail, Devon. The views include Haresfield Beacon, Housestead Camp on the Cotswolds, Witley Common Cottage. It is stated that 7339 people visited Tattersall Castle, Treasurer's House, York, Alport Height, Perthshire, Plaitford Common, Longshaw Moor. The appended map shows the situations of the Trust Properties. There is an appreciative letter from the Prime Minister who is one of the Hon. Vice-Presidents. The Earl of Crawford and Balcarres takes the place of Mr John Bailey as Chairman of the Executive Committee.

NATURE. A Weekly Journal of Science. Published by Macmillan & Co., Ltd., St Martin's Street, W.C.2. 1/- weekly. Editor, Sir R. Gregory, Bart. This Journal continues its most able help to Science, and its papers on the Faraday Memorial and the Centenary Meeting of the British Association have been exceedingly well done. On p. 325, Prof. Ruggles Gates gives a valuable paper on the origin of Bread Wheats. We heartily congratulate him on his recent honour. On p. 586 there is an interesting review on Vol. v. of the costly "Index Londinensis," now brought to a conclusion, by one who ought to know a great deal about it. He alludes to John Hill's *Family Herbal*, 1812, with its "mostly very crude" figures. But Hill died in 1755. He says the names are often quite foreign to our modern ideas. In these cases the Editor has interpreted the terms figured in terms of modern nomenclature. For example, *Malva moschata* is called in the book "Vervan Mallow" Alcea, which is not a classical name at all, but he says names are always quoted just as the author gives them. The previous paragraph makes one shudder since *Comarum palustre* in Vol. i. is also given in Vol. iii. as *Potamogeton palustris*, but it is not the Pondweed.

NATURE RESERVES, SOCIETY FOR THE PROMOTION OF. British Museum (Nat. Hist.), Cromwell Road, London, S.W.7. Lord Rothschild has succeeded Lord Ullswater as Chairman, a position which he has occupied with such conspicuous success since 1912. At Wood Walton Fen, which was given by the Hon. N. Charles Rothschild, Capt. E. B. Purefoy has introduced a colony of the Great Copper Butterfly, which is thriving well despite the attacks on it by Ichneumon. The Marsh Sow-Thistle was also planted there, and it has now greatly spread. The lower water-level of the Fens has made the place much drier, so far to the advantage of the flowering plants.

NORTH WESTERN NATURALIST, THE. Edited by A. A. Dallman, in collaboration with nine other scientists. Vol. vi. Published by T. Buncle & Co., Arbroath. Annual subscription, 7/6. Post-glacial History of European Woodlands, F. E. Weiss, F.R.S., p. 6. Nature Study at Brooklyn Botanic Garden, Ellen E. Shaw, p. 11. Richard Buxton, Botanist, p. 18. *Epilobium nummularifolium*, Carding Mill Valley, Church Stretton, p. 30. Cumberland Mosses, Jas. Murray, p. 31. The Flora of South Lancashire is well on its way, p. 66. Nectar and Honey, A. A. Dallman, p. 74. Hosts of *Lathraea Squamaria*, p. 96. *Spartina Townsendii* on the Lancashire and Cheshire Coast, J. D. Massey, pp. 98 and 163. A kindly reference is made to the 80th birthday of G. C. Druce, p. 130. Changing Scenes, F. E. Weiss, p. 132. The Welsh National Herbarium, H. A. Hyde, p. 135, an excellent account of a very virile institution. Mr Hyde has now brought the botanical collection up to 123,378 specimens. Mid-Shropshire Orchids, George Potts, p 163, includes of course " *O. latifolia*, common generally in wet ground." It is more than useless to publish such statements. It should be incumbent on a recorder to know the plants he writes about. One presumes that he means *incarnata*, but, if so, he should say so. *O. maculata* L. is not *O. Fuchsii* Druce, and it is more than doubtful if *elodes* Griseb. is true *maculata*. The last is a precise and definite name, *elodes* is vague and out-dated. The name *Habenaria chloroleuca* is not correct; it should be *H. virescens*. Fruiting of *Adoxa*, A. A. Dallman, p. 165. *Senecio squalidus* and *Radicula sylvestris* in S. Lancashire, J. D. Massey, p. 166. Congratulations are offered in the December issue to W. T. Boydon Ridge on his succession as President of the North Western Naturalists' Union. Since 1890 he has been President of the North Staffordshire Field Club. An especially important article in the Journal is the Supplement by A. Wilson, F.R.Met.Soc., on the Altitudinal Range of British Plants in England, Wales, Scotland and Ireland, from which I have repeatedly taken references for my Comital Flora. It is a work of great detail, and is remarkably well done. Unfortunately, much of " The Comital Flora " was in type before the article appeared, but I heartily congratulate Mr Wilson on his work. It will greatly supplement the notes given in " The Comital Flora."

PHENOLOGICAL REPORT, THE, 1930. Editor, E. Stanford. Pp. 345-464; 3/-. Summaries of the observations are given. For 1930, there was an excess of rain (except for N. Scotland) in all four seasons, it being the ninth successive wet year over the British Isles. The summer half contributed nearly two-thirds of the excess. Interesting phenological details are given on p. 352. *Scabiosa Succisa* flowers earlier in Scotland (N. & E.) and England N.E. than in its southern habitats. A weakness of the Report seems to be that too vague specific names are used, *e.g.*, *Rosa canina*, where 50 plants may be included, and each district recorded may have a different species under observation. Black Knapweed and Hawthorn are other instances. A midland observer with *oxyacanthoides* under observation would shatter the notes made by other observers of *monogyna*. Pp. 99-152 is " Hawthorn " Range. It is difficult to swap horses when crossing a stream, but the central authority should insist on having a specimen of the species handed to it. The mass of work involved in this Report is stupendous, and we must congratulate the Society on its production.

PRESLIA, REPORT OF THE CZECHO-SLOVAK BOTANICAL SOCIETY OF PRAGUE. Pp. 117. 1930. Ad Floram Carpatorassicum Additamenta Critica, with beautiful photographs of *Viola declinata*, *Gentiana* species, etc. *Circaea lutetiana* has two forms—*albiflora* and *rubriflora*, and a var. *villosa*. There is a valuable catalogue of Czecho-Slovak Botanists, and how vigorous they are the list of their works testifies.

PROBST, R. Vierter Beitrag zur Adventiv-Flora von Solothurn und Umgebung. Separat. Mitt. Naturf. xxi., pp. 46, 1929-31. A most excellently compiled and compact account of the adventives of that district rich in wool-aliens. *Acaena anserinifolia* (Forster) Druce = *A. sanguisorba* Vahl, Derendingen, is also naturalised by the Tweed, as mentioned in the "Adventive Flora of Tweedside." Dr Probst has, as a possible wool-alien, a purple-flowered *Convolvulus arvensis*, which I have seen at Selkirk. There is an excellent guide to the Literature, but it is not exhaustive.

RAMSEY, LEONIDAS W., AND CHARLES H. LAWRENCE. GARDEN POOLS LARGE AND SMALL. New York: Macmillan & Co. Pp. 108, photos 28, drawings 13, 1931; 10/6. The coloured frontispiece of blue, pink and white Water-Lilies is a delightful rendering of a pool within a garden—a garden within a pool. A real need exists for a book which not alone tells how to build a pool which conforms to the concept of good taste in landscape gardening, but which, when constructed, becomes an integral portion of the home grounds. In this useful guide excellent details as to how to form a pool, where to place it, and what to plant in it, are supplied. The excellent illustrations are most helpful, and there are examples not only of the large tanks but of small pools for which room may be found in most gardens. These pools are most desirable adjuncts to the ordinary garden since a completely different set of plants may be grown. To ensure success no better guide than this can be found.

RUBEL, PROF. VON E Bericht über das Geobotanische. Forschungsin-institut Rubel in Zurich. 1931.

RUSSELL, SIR JOHN F., F.R.S. CONDITIONS AND PLANT GROWTH. One of the popular and able Rothamstead Monographs. Sixth edition, pp. vi. + 636, fig. 60. Longmans, Green & Co., 1931; 21/-. Twenty years ago witnessed the first production of this book, and its steady progress through the years has added an immense amount to our knowledge of the subject. To keep the matter to about 600 pages has only been accomplished by the most rigid pruning. Its contents are (1) Historical and Introductory. (2) Soil conditions affecting plant growth. (3) The composition of the soil. (4) The soil in nature—changes in its mineral composition. (5) Changes in the original matter. (6) The micro-organic population of the soil, and its relation to the growths of plants. (7) The Biotic conditions in the soil. (8) The soil in relation to plant growth. (9) Methods of characterising soils. The Appendices include—Methods of soil analysis, Selected Bibliography of papers on soil condition, Index of authors and of subjects. The excellence of Sir John's work is generally acknowledged, and the production of this portly volume, brim-full of accurate information, adds another debt to that the agricultural world owes him for his painstaking observations.

SALISBURY, E. J. Morphology and Ecology of *Ranunculus parviflorus* L. Annals of Botany, clxxx., 1931. An able study of a most interesting species. The examination of 725 flowers from a diversity of localities has yielded many points of value. Maps are given to show the geographical distribution, which is typically atlantic. With us it is most persistent in Devon and Cornwall, and Durham is its northern limit. It occurs in France, Spain, Portugal, Algiers, Morocco, eastwards along the Mediterranean seaboard to Southern Greece, Thrace, Taurida and Cyprus (!) where it grows freely in damp soils. It also extends to the Canaries (!), Madeira (!) and the Azores (!). It is absent in northern and central Europe, rare or absent in E. France. As a form, it is found in Australia and New Zealand, and it is naturalised in the United States and in Bermuda. He shows that the statement made by Moss of its preference for calcareous soils is misleading. Actual culture gives no support to this view. In the examination of the species, 115 different types of floral organisation were observed. It is shown to be a winter annual.

SEWARD, A., Sc.D., LL.D., F.R.S. PLANT LIFE THROUGH THE AGES. A Geological and Botanical Retrospect. Pp. 583, tt. 137, and nine reconstructions of Ancient Landscapes by E. Villiamy. Cambridge University Press, 1931; 30/-. In this handsome volume Prof. Seward has brought together an immense amount of information treating of the subject, and his knowledge of Palaeontology has led him to select that which is most applicable to the subject. One is accustomed in works of this character to hear most positive statements on what, after all, is purely conjecture. From time to time we have had estimates given of the age of the world, each given by an authority in an *ex cathedra* manner, and they differ even more greatly than " builders' " estimates. Eddington says the geologist may claim anything up to 10,000 million years without provoking a murmur from astronomers. Rutherford said 34,000 million years and probably much less. Kelvin just gave a 100 million which he afterwards reduced to 20 million. While Sollas needed 70 million, the Clerical suggestion was the Biblical age, dated from 4104 B.C., and they knew the day to a hair. One may expect the claims made will vary from time to time, but even the largest amount demanded seems scarcely adequate to account for all the forms of animal life which occur. But estimates are apt to overlook the more rapid alterations which went on when greater radio-active forces were in existence. Not only do the estimates vary of how long ago was the beginning of things, but also of the ways in which they have developed. We at least may say all is conjectural, but that there is a greater probability of one than another. On this most precarious platform, the most positive statements are made. Prof. Seward is too wise to commit himself to such dangerous hypotheses. The book covers such a wide area, is so full of valuable detail and so excellently arranged, that to make a condensation of it is well nigh impossible. It should be in the possession of every student. It is beautifully printed and illustrated, thanks to the Cambridge University Press, and the Professor gives well deserved thanks for its help. The completion of this excellent piece of work must give a great and lively pleasure to its producer. He has certainly attained his object of " giving to those who have little or no knowledge of Botany or Geology, glimpses of the plant-world at the several stages of its development. By eliminating all that is untrustworthy, we can at least place the student in a position to form his own conclusion and supply him with an outline which can be modified or improved as fresh discoveries are made."

Singer, Charles. A Short History of Biology. A general introduction to the study of living things. Pp. 572, fig. 193. Oxford: Clarendon Press, 1931; 18/-. The cover indicates the aims of this scholarly volume—" The book places before the reader, in simple language, the general nature of the main subjects of interest in modern Biology. These are treated as a series of problems awaiting solution. A consideration of the way in which these problems have gradually emerged shows why they, and not innumerable other themes that have been raised in the past, are now absorbing the energies of men of science. Thus the volume, though historical in method, is essentially an introduction to current Biology. It demonstrates that the trend of scientific thought can be understood only when interpreted in the light of history. The book will afford the non-technical reader an insight into the preoccupations and interests of the biologists of to-day." In this work Dr Singer has given first the oldest Biology, starting with Hippocrates, 460-370 B.C., through Aristotle, 384-322 B.C., to Theophrastus, 380-287 B.C., but there were many earlier observers, notably Thales of Miletus, who predicted and observed the Eclipse on the 28th of March 585 B.C. But his works were scattered records, whereas with Hippocrates the works themselves remain and they show the Physician in the sick room, and can watch him at his work. Some of his aphorisms remain to this day with us. " One man's meat is another man's poison." "Desperate diseases need desperate remedies." His Charter of Science sets forth the scientific method of assuming natural explanations of all observable events. From 322 B.C. to 1200 A.D. covers the Decline and Fall of Ancient Science. On the death of Alexander in 323, his Empire was broken up. Egypt fell to Ptolemy, whose dynasty lasted 300 years, the last of the sovereigns being Cleopatra. It was at Alexandria that Anatomy became a recognised science. These dark ages are, I expect, not so dark as they seem, and one always thinks that the Romans never had proper credit given to them for their aid to our horticultural knowledge. Dr Singer says that botanical drawing began to be practised towards the end of the first century B.C. Dioscorides and Pliny did excellent work in the first century A.D. Two figures of *Erodium Mala-*

choides and *Geranium molle* are depicted from the MS. of Juliana Anica. The really dark ages are from 200-1200 A.D. But individual work went on. There is an excellent engraving of the carving on Chartres Cathedral of the Columbine, of about 1260. We have at Christchurch Cathedral, Oxford, of a century later, an example of the work of Albertus Magnus and some of his excellent drawings are reproduced. The great Florentine artist, Botticelli, was the first botanical painter in modern times and thirty species can be identified in his paintings. A beautiful illustration of *Anemone nemorosa* and *Caltha* by Leonardo da Vinci is given. An excellent account is given of Harvey. A chapter is devoted to the Historical foundation of modern Biology. He says in the 16th and 17th centuries many plants were naturalised—Tomatoes, Maize, Acacia, etc. Is the last not the *Robinia?* The others were grown at Bologna and exist in Aldrovandi's Herbarium, with Tobacco. Ray, Dr Singer considers to be one of the great Systematists. We attribute to him a " Catalogus " of British Plants in 1697. He certainly issued in 1670 a " Catalogus Plantarum Angliae et insularum Adjacentium," but it was not this work but his "Synopsis" of 1690, 1696, and its third edition by Dillenius in 1724 which were the pocket companions of every botanist of this country till Hudson's "Flora Anglica " in 1762 took their place. Reference might have been made under Australian Exploration, to Bauer as the unrivalled painter of the plants for Sibthorp's "Flora Graeca." He and Brown collected 4000 species in Australia. The two last chapters, xiv. and xv., of this fascinating work are devoted to Sex and the Mechanism of Heredity in which Mendel's work receives adequate treatment.

South Eastern Union, Transactions of, 1931. Contains the address by the President, Lt.-Col. A. H. Wolley-Dod, on " The Experiences of a Field Botanist," pp. 27-40. A very readable and graphic paper. He liked Bentham and his Keys. Britten told him that a botanist tried to run down the Primrose by a Key and came to the conclusion that it was a Fern! A good story, was he relating a personal experience? In 1881, Wolley-Dod went to Gibraltar where he collected industriously. On returning to England he stayed with Marshall when the *Flora of Kent* was being prepared. In 1896 he went to the Cape. In 1912 and 1913 he was stationed at Gibraltar, and the results of his botanical work there have been published.

Sprague, T. A., D.Sc., and E. Nelmes. The Herbal of Leonhardt Fuchs. Journ. Linn. Soc., xlviii., n. 325, pp. 545-643, 1931. An extremely able paper in which the woodcuts in Fuchs have been identified, with many most interesting details. The translation into English of the habitats is very useful, and these habitats are descriptive. The Bibliography is a valuable part of this able work. The figure of *Papaver Rhoeas* is said to be the variety *erraticum* = *P. Fuchsii* Thunb. 100 species are mentioned for the first time in Germany in the " Herbal." The Introduction includes the Life of Fuchs, the Preparation and General Characteristics of the Herbal, Its Object and Arrangement, its Bibliographical Source, New Genera, Taxonomy and Nomenclature. To him we owe the genera *Ophioglossum*, *Digitalis*, and *Campanula*. and the names of twenty species now in use were founded by him. *Aconitum Lycoctonum*, *Allium ursinum*, **Anagallis foemina* (this was used by Aldrovandi. and his accompanying specimen at Bologna is as blue as if it had been gathered last year), *Angelica sylvestris*, **Atriplex hortensis*. **Cannabis sativa*, **Chelidonium majus*, *Digitalis purpurea*, **Hedera Helix*, *Hordeum distichon*, *Iris germanica*, **Lactuca sativa*, *Lilium croceum*, *Origanum vulgare*, *Pimpinella major* (needlessly altered by Linnaeus), **Plantago major*, **Raphanus sativus*, **Smilax aspera*, **Sonchus aspera*, **Vitis Vinifera*. (The asterisked names are used by Dioscorides). Of the 100 new species in Fuchs, Linnaeus only directly cites Fuchs for eleven. The scientific value of his work and his place in the history of Botany are short, but excellent chapters, as is that of the systematic conspectus of the plants figured. Out of the 487 included species. 289 appear to have been known to the Ancients, and 64 to the Middle Ages. 31 were first recorded by Brunsfels, the remaining 103 were first figured in Fuchs, though many of these had been previously described in Tabernamontanus " Bock " in 1539. Brunsfels " Viva Eicones " contained 258 species and varieties, of which 162 were classical, 49 mediæval, and 47 new. Only 211 of them were included in Fuchs "Historia." Fuchs, however, had 276 additional plants of which 103 were new. *Diplotaxis tenuifolia* (named *Eruca sativa*) is one of these. It is apparently indigenous in Southern Europe. but introduced in the North, and is said by him to be a recently introduced medicinal plant cultivated in gardens. Thellung gave its first European record as Strassburg in 1740. The final chapter is on the identification of the figures.

Stapledon. R. S. Welsh Plant Breeding Station. Pp. 240, 1931; 5/-. Self- and cross-fertility and flowering habits of certain herbage, grasses. and legumes, with studies in bulb development and spikelet characters in *Arrhenatherum*, A. R. Beddows, B.Sc., and T. J. Jenkin, M.Sc. It is found that the annual species are mostly highly self-fertile. At Aberystwyth low-fertility was recorded for *Alopecurus agrestis*, *Apera Spica-Venti*, and possibly *Phalaris canariensis*. Kornicke found the perennials in a high degree of sterility except the fully self-fertile *Brachypodium sylvaticum* R. & S., *Cynosurus cristatus* L., *Festuca gigantea*, and *Hordeum secalinum*, as well as some other foreign species. *Sieglingia* has long been known to be cleistogamous. but 50 per cent. only of the fruits were fertile. Prof. Jenkin treats of the self-fertility of *Lolium perenne*, and gives a paper displaying great evidence of research. This includes crossing *L. perenne* with the var. *multiflorum*, the offspring showing no evidence of incompatibility nor of sterility in the F_2 generation. As regards *Arrhenatherum*. a much valued research on *A. elatius* and *tuberosum* is given and unlike Gilibert. Underwood. and others, Jenkin thinks the differences are scarcely specific. Soil conditions had only a modifying effect on degrees of bract-development. This is excellently dealt with and matter of real value is given which throws new light on the relationship of the two types. It appears to me that it is more convenient to keep them apart, but at the same time to bear in mind that *elatius* may also be bulbous. We hope Prof. Jenkin will give us the results of his studies on *Phleum praecox* and *P. intermedium*.

Stephenson, Rev. T. Dactylorchids of North Africa. Journ. Bot., 145 and 177. 1931. *O. elata*, *O. Munbyana*, *O. Durandii*.

Swansea, Proceedings of the Scientific and Field Naturalists' Society. President, Prof. A. E. Trueman. Our member, Mr J. A. Webb, B.A., gives an account of the twenty excursions made during the year, in which many interesting plants were seen. His Report on Botany is not confined to Glamorgan, but has reference to Brecon, Radnor, Cardigan, Monmouth, etc., and contains much of interest. The plants include *Lychnis alba*, Rhayader, Brecon; *Lavatera arborea*, Cardigan; *Malva rotundifolia*, Presteign, Radnor; *M. nicaeensis*, Cumbwria, Swansea. The best find was that of *Geranium sanguineum*, var. *lancastriense* (sp. non vidi) Sandrill area in W. Gower, v.-c. 41, Mr P. S. Jewell, a great extension of its range. *Prunus Cerasus* and *P. domestica*, Lanwyrld, Brecon; *P. insititia*, Abergweryn; *Sedum reflexum*, Cardigan town; *S. micranthum*, Penrice; *Limosella tenuifolia*, pond near Aberavon (it also grew in quantity at Kenfig), a notable find; *Narcissus lobularis*, Whitland, Carmarthen. A photograph is given of their Life-member and Past President, Mr H. R. Waterfield. The Relation of Air-vesicle to Habitat in *Ascophyllum nodosum*, by G. David. A well-printed and well-edited Report.

The Fifth International Botanical Congress, Cambridge. 1930. Report of Proceedings. Edited for the Executive Committee by F. T. Brooks and T. F. Chipp. Pp. 677. Cambridge University Press, 1931; 21/-. A portrait of Prof. A. C. Seward forms the frontispiece. At a meeting in London in 1911, a committee and provisional officers were appointed for a congress in Britain in 1915 when I was chosen a Vice-President. This was subsequently abandoned owing to the war. The fourth Congress was held at Ithaca, U.S.A., in 1926, when an invitation was sent by Great Britain inviting the fifth Congress to take place in London. This was cordially accepted. On January 27, 1927, another meeting was held in London, when Oxford or Cambridge were deemed more suitable meeting places, the choice eventually falling on Cambridge. It was also decided that the Congress should be confined to pure Botany. It seemed to me that it was to be a restricted meeting and that my side of the subject would not meet with much favour, so, as I had no special invitation, I decided not to attend. The meeting was practically a meeting for teachers, and it cannot be said that field-systematists had any undue share in its deliberations. The Conference appears to have been well organised and the functions numerous, a reception before the official opening being given by the Minister of Agriculture at the Imperial Institute in London. The opening conversazione took place at St John's College, Cambridge, on August 17th, and the meetings were held daily until the 23rd. A luncheon was given for the Hon. Graduates at Magdalen College by the Vice-Chancellor on August 20th. These were—Prof. Diels, Berlin (the successor to Dr Graebner), Dr J. Briquet (Geneva), Prof. Halle (Stockholm), Prof. Jones (Wisconsin), Prof. Schroeter (Zurich), Prof. Went (Utrecht), Prof. Dangeard (Sorbonne). An invitation for the sixth Congress, to be held in Holland in 1935, was given on behalf of Dutch Botanists by Prof. Went. The abstracts of the lectures and discussions occupy over 600 pages. The book is a handsome one—such as the Cambridge University Press usually produce—but it is disappointing to see how small a part is devoted to the views of British taxonomists.

THOMPSON, J. McLEAN. STUDIES IN ADVANCING STERILITY, Part iv. The Theory of the Leguminous Strobilus. Publication of the Hartley Botanical Laboratories, University of Liverpool. Pp. 77, 1931. Both are papers of a high order of merit, and are beautifully illustrated.

THURSTON, EDGAR, C.I.E. Notes on the Cornish Flora. Royal Inst. of Cornwall, 1930. Includes *Reseda lutea* L., var. *longifolia* Ten., Par; *Viola Lloydii* Jord., Par; *Malva parviflora* L., Launceston; *Rubus egregius* Focke, Glym Bridge; *Sonchus oleraceus* L., var. *albescens* Neum., and many others.

TORREY BOTANICAL CLUB, BULLETIN OF THE. Editor, Tracy Elliott Hazen. Monthly. 6 dollars yearly. Among many papers of interest is the List of Seed Plants and Ferns of the Glacier Bay, National Monuments, Alaska, by W. S. Corfe. The Phytogeny of the Maize Plant, G. N Allum. The Genetics and Octogeny of Maize are also fully gone into. A C. Smith treats of the Ferns from Mount Roraina. Botanical results of the Tyler Dinda expedition, No. 5, 6, 7 and 8. This is in the Orinoco Valley. Mount Dinda, which rises to over 7000 ft., was ascended.

WATSON BOTANICAL EXCHANGE CLUB. Fourty-seventh Annual Report for 1930-1931. Distributor (of 1844 specimens), E. C. Wallace. There is a photograph of "Skeg," a vernacular name for a Bullace by J. E. Little, who corrects his "hybrid" sedge *C. contigua* × *divulsa* to *C. divulsa*. Like ourselves the Society suffers from a lack of real working members. There seem to be no new records.

WEISS, F. E., D.Sc., F.R.S., P.L.S. The Post-glacial History of European Woodlands. North Western Naturalist, March 1931. Dr Weiss gives special prominence to the importance of investigations of pollen occurrence in the peat-moors of Britain. He holds that Beech woods came in after the separation of Britain from the Continent. Its pollen is very scantily represented even in our more recent upper layers of peat deposit, and is absent from Ireland. In prehistoric times *Carpinus* was hardly represented in Britain. The prevalence of the Alder points to a greater rainfall associated with badly drained lowland soil.

WILD FLOWER MAGAZINE. Editor, Mrs Dent, Flass, Mauls Meaburn, Penrith. Bi-monthly. The Society goes on with intense zeal under the stimulating influence of its President. The Rev. D. M. Heath, p. 3, gives a paper on "Botany in the Winter Months." He mentions many late and early flowers. "Three in a Car" is a readable note. Its occupants went half across England to get *Cuscuta epilinum* in Northamptonshire. They halted at Esthwaite for *Hydrilla* and *Naias*, in Glen Farg for *Lychnis Viscaria*, and at the Sands of Barry for *Corallorrhiza*. They went northwards, culling *Linnaea* and *Goodyera* at Grantown, and *Moneses* near Golspie. Then Inchnadamph was visited for *Arctostaphylos alpina*, *Carex rupestris* and *Arenaria norvegica*, and Betty Hill for *Dryas*, *Oxytropis*, *Carex incurva*, and *Primula scotica*. At Thurso the usual rarities were noted. On the return Glen Lyon and Ben Lawers were visited and the rare alpines seen, but not *Potentilla rupestris*, for that does not grow in Scotland. *Astragalus alpinus* was gathered on Ben Vrackie. It was a memorable journey with a chauffeur of the first water. Mrs Dent gives an account of a London Rock-garden, p. 8. On p. 13, *Anemone Pulsatilla* is wrongly recorded for Oxfordshire; it should be Berks. Sussex Notes should be sent to F. O. Whitaker, 45 Lindene Road, Plumpstead, S.E. 18 (not to Mr Gordon Dalgliesh). *Tunica Saxifraga*, p. 18, was first found by Miss Andrews in 1925, but Miss S. Haines had it two or three years earlier. Of course it is not native. California Thistle at Hampstead, p. 10, what is this? April-May, Mrs Dent gives an account of her visit to Portugal. E. M. Haines writes on "Friends from Abroad"—*Gaultheria Shallon* in the New Forest, and *Azolla caroliniana*—but it is not *caroliniana*, but *filiculoides*. Mrs Milvain, p. 15, found eighteen orchids on the Cotswolds. June-July. Many kindly references are made to Dr Druce. The Rev. H. H. Harvey, p. 3, found *Lychnis alpina*, *Mulgedium*, *Astragalus alpinus*, etc., etc., in Clova. On p. 4, the Bucks *Euphorbia Esula* is an error for *virgata*, so too the Sussex *Esula* is *virgata*. Miss Robinson found *Lathyrus hirsutus* near Brighton. Dr Power found *Mespilus* and *Tragopogon porrifolium* in Lincolnshire. It is not *Isoetes lacustris*, p. 6, which grows in Dorset, but *echinospora*. *Euphorbia pilosa*, p. 11, does not grow at Windsor. Dr Druce, p. 15, records *Juncus alpinus* (*subnodulosus*) from Widdy Bank in 1903. August-September. Mrs Dent gives a graphic account of her journey through Britain. Miss Gillam describes Switzerland in May. Miss Vachell's' Flowers and Climate is reprinted here, and an account of the de Laszlo portrait presentation is given on pages 8 and 12. October-November. Contains a photograph of de Laszlo's portrait of Dr Druce, and a most kindly reference to it by the Editor. A Day with St Brandon, p. 4—an account of an ascent of that fine Irish mountain. Mrs Foggitt and Lady Victoria Russell were of the party, and they gathered *Saxifraga decipiens*, *S. groenlandica*, *S. Drucei*, and *S. sponhemica*. An account and review of the *B.E.C. Report* for 1930 is on p. 7.

WILLIAMS, R. O. FLORA OF TRINIDAD AND TOBAGO. Pp. 197-308. Government Printing Office, Port of Spain, 1931; 4/6. The continuation of this excellent Flora covers Connaraceae, Leguminosae to Mimosa. The Leguminosae are one of the most important Families of the Islands. There are good keys to the genera. Some of the most beautiful trees in the islands belong here. Such are *Erythrina*, *Caesalpinia*, *Haematoxylon* and *Cassia*. The completed volume will be a most useful addition to our Island Floras.

WILSON, A., F.R.Met.S., F.L.S. THE ALTITUDINAL RANGE OF BRITISH PLANTS. Pp. 105. Reprinted from the North Western Naturalist. T. Buncle & Co., Arbroath, 1931; 4/-. We have nothing but praise for this work which Mr Wilson has compiled with such enthusiasm. One may safely urge every subscriber to "The Comital Flora" to buy a copy, as although many altitudes are given in that work, there are many others given here for which one could not find space. Mr Wilson gives consistently the plant altitudes for England, Wales, Scotland, and Ireland, and the sources of his information. It is very fortunate that the dates of publication should so closely synchronise. There must be, too, a range of readers outside the Comital Section, and to these and to others, we can cordially recommend this carefully compiled and well-arranged list which reflects credit alike on its writer and on the valuable publication in which it first appeared.

WINCHESTER COLLEGE NATURAL HISTORY SOCIETY. REPORT. 1927-1931. Pp. 63, 1931. Editor, S. A. McDowall. There are notes on Hybrid Orchids by P. M. Hall. The botanical notes include a record at Holmesby of ×*Drosera obovata*, ? N.C.R., also a number of new stations for other plants. List of papers read 1927-1931 is included.

WOLLEY-DOD, COL. A. H. In a note on *Rosa scabriuscula* in "A Revision of the British Roses," *Journ. Bot. Suppl.*, 90, 1931, Lt.-Col. A. H. Wolley-Dod, the author, drops *britannica* as a nomen confusum, and makes two new forms of *scabriuscula*—one forma *Leesii*, Menai Straits, the second forma *moretonensis*, Moreton, etc., Cheshire (as *Jundzilliana*). I can see no Lees mentioned under the Menai Bridge plant, only Harbord Lewis. See *The British Roses*, *Journ. Bot. Suppl.*, 97, 1910. Is *Leesii* correct? (The name is correctly written "*Leesii*." See *Journ. Bot.*, 41, 1929).

OBITUARIES.

Fries, Prof. Thore Christian Elias. He was Professor of Botany at Lund University and leader of the Swedish Botanical Expedition to Southern Rhodesia, where he died early in August 1930, at the early age of 44. He was the son of Prof. Theodor Magnus Fries and the brother of Prof. Robert Fries.

Lotsy, Dr Joh. Paul. Biology has suffered a great loss by the death of Dr Lotsy, who was well known in this country and exceedingly popular at meetings of the British Association, which he frequently attended. He was the author of a great work on the phylogeny of plants, of which three volumes appeared in 1907-11. This was, however, never completed, as the result of his valuable investigations in genetics, to which the latter part of his life was devoted. Two valuable contributions to evolutionary theory were written in English—" Evolution by means of Hybridization," 1916, and (in conjunction with Dr Goddijn) " Voyages of Exploration to Judge of the Bearing of Hybridization Upon Evolution. I —South Africa," 1928.

He was for some time Secretary of the Dutch Society of Sciences, having its headquarters at Haarlem. He was a great traveller, pursuing his studies in South Africa, Australia, and New Zealand. He attended the Centenary celebration of the British Association at the special request of its President, General Smuts. He had been in failing health for some time before his decease, at the age of 64.

Marloth, Dr Rudolf. This great Cape botanist was in charge of the Botanical Survey Area at the Cape and was appointed a member of this Botanical Survey in 1918.

Dr Marloth was formerly a consulting analytical chemist, and in the course of his work gained a reputation as a botanist. He was president of Section B at the first meeting of the South African Association for the Advancement of Science in Capetown in 1923, and of the whole Association at Kimberley in 1914. He was president of the Cape Chemical Society in 1913. The author of many botanical works, Dr Marloth was chiefly known to European flower-lovers for " The Flora of South Africa," which is especially valuable as an introduction and companion to the great " Flora Capensis " now for many years in preparation at Kew.

His second volume on the Podostemonaceae-Umbelliferae did not appear till the end of 1926. Since the eighteenth century the petaloid Monocotyledons have been the chief representatives of the South African flora in our northern gardens, and Dr Marloth's volumes reminded English gardeners of the beauty of many of the bulbous plants of the Cape, especially the hybrid races of gladiolus. He considered that *G. Cardina-*

lis, which Francis Masson (a Kew gardener sent out to the Cape at the request of the Royal Society by George III.) brought to England in 1789, rivals *Disa grandiflora*, " The Pride of Table Mountain," in beauty.

MONCKTON, HORACE WOOLLASTON. Had been Treasurer of the Linnean Society since 1905 and died on January 14th, 1931, at the age of 74. His death was a sad loss to the Society in whose interests he had laboured so assiduously and conscientiously for so many years.

MOORE, SPENCER LE MARCHANT. Born 1st November 1851, and died on 14th March 1931, aged 80 years. An admirable and appreciative article on this well-known botanist appeared in the May issue of the *Journal of Botany*, 1931.

MURR, JOSEF. Studienrath Professor Dr J. Murr, to give him his full style and title, was born at Brixen, Southern Tyrol, in 1864. He died suddenly, at Innsbruck, on December 4, 1931, after a slight operation, apparently from thrombosis. By his death Austria, and indeed all Central Europe, loses one of its leading field-botanists, and this Society a valued Foreign Member.

Murr's father was a schoolmaster, who eventually became Professor at the Training College for Teachers at Innsbruck, as well as School Inspector for that district, and he too followed the scholastic profession. After his schooldays, he graduated at the University of Innsbruck in Philology, and passed on to be a master at the Gymnasia of various Austrian towns, Marburg, Trient, Linz, and finally Feldkirch in the Vorarlberg district. He proved himself to be a capable scholar by the publication of works on classical literature and philosophy. But his real interest and capacity lay in the direction of Natural History, more particularly Botany, in which he attained well-earned distinction. During the seventeen years of his residence at Feldkirch, the period of his greatest activity, he added about eighty species to the known flora of the Vorarlberg, and published scores of papers and notes on the subject in the local scientific journals, in the *Oesterreichische Bot. Zeitschrift*, the *Allgemeine Botanische Zeitschrift*, and in the *Proceedings of the Vienna Academy of Sciences*, etc. All these were the *parerga* to his *opus magnum*, the *Uebersicht ueber die Farn-und Blüthen-pflanzen von Vorarlberg und Liechtenstein* which he succeeded, in spite of great difficulties, in publishing in parts, 1923-6. Though not large, it is a great work. The quite adequate enumeration of the plants is inspired by the spirit of investigation in which the composition of the flora and its history are discussed. Its value from the purely taxonomic point of view is illustrated by his treatment of the genera *Chenopodium* and *Hieracium*, upon both of which he was a recognised authority. As to the former genus, it may be mentioned that a monograph relating to it was published in the Reports of this Society (173, 1912); as to the latter, the account of it given in the " Uebersicht " occupies more than fifty of its pages. Another striking feature is the exhibition of his almost uncanny flair in the recognition of doubtful forms as hybrids, and in referring them to their parents. But it is perhaps in the "Phytogeographical Appendix," which occupies the last hundred of its five hundred pages, that the chief interest of the book is to be found. It is here pointed out that the significance of the district concerned is that it is the meeting-place of various floras, more particularly of northern and southern, and the share of each contributing factor is indicated. The author's practical knowledge of geology enabled him to give what he terms a "geo-botanical" account of the constitution and distribution of the plant-associations of the flora. It also assisted him in his study of the fossil plant-remains in the interglacial breccia-deposits of Hötting, near Innsbruck.

As the "Uebersicht" enumerates only Vascular Plants, it might be concluded that the author was not familiar with other groups. On the contrary, he was a quite competent muscologist, lichenologist, and mycologist, and published work in all these capacities. Some account of the distribution of these non-vascular plants is incidentally included in the phytogeographical appendix.

Murr was no traveller into foreign parts. It does not appear that he ever quitted Austria, though he may have ventured into Switzerland, Germany, and Italy on his many botanical excursions. But Austria he knew well, from the lake of Constance to the Adriatic.

After his retirement in 1919 from scholastic work at Feldkirch, Murr finally made his home, not at his native Brixen, which, to his lasting sorrow, had become Italian territory, but at Innsbruck, where he had received most of his education. Here his forceful and attractive character, with his facile pen, soon gained the respect and esteem of his fellows, so that he became something of a personage. He had now leisure for preparing for the press his "Uebersicht," already discussed, and also for his work on the fossil plant-remains from Hötting, many of which he succeeded in identifying with species still existing in the district. His literary activity became greater than ever, though less purely scientific. He contributed to the local press innumerable articles on subjects of all kinds. Many of them were popular articles on botanical subjects, the local flora, the botany of the public gardens and hot-houses, the fruits and vegetables of the market, the seasonal changes in vegetation, and accounts of his frequent botanical excursions in the neighbourhood. But he turned more and more to the discussion of social and moral questions. As a devout Catholic, in fact a Tertiary of the Order of St Francis, he was deeply interested in the spiritual as well as the material welfare of his town and of his country, and was unwearied in his efforts to promote both. His good influence will be seriously missed in the city of Innsbruck

S. H. VINES.

O'BRIEN, JAMES, V.M.H. Had a most profound knowledge of Orchids and their cultivation. In "The Gardeners' Chronicle" of January 3rd, 1931, there appeared an appreciation of his work, together with a portrait. That periodical "gratefully acknowledges its great indebtedness to James O'Brien for years of help and inspiration." He was one of the earliest recipients of the Royal Horticultural Society's Victoria Medal of Honour in 1897. He was born in 1842 and died on December 29th, 1930.

OSTENFELD, PROF. CARL EMIL HANSEN. All British botanists heard of the death of Prof. Ostenfeld at the relatively early age of 57 with deep regret. He wrote English quite well and was always extremely gracious in the determination of British plants sent to him by our members or others. We are, perhaps, most indebted to him for his valuable work on marine and freshwater plankton. He also possessed an intimate knowledge of aquatic plants. He received the Foreign Membership of the Linnean Society in 1929.

SHERRING, RICHARD VOWELL. An appreciation of the work of this capable botanist appeared in the "Bournemouth Daily Echo" of February 18, 1931. He was one of the founders of the Bournemouth Natural Science Society and the first to receive its gold medal in 1921. He undertook for the Society the recording and photographing of *Spartina Townsendii* in Poole Harbour and his report was published in the "Proceedings." He spent much of his earlier life in investigating the flora of the West Indies and British Guiana, and was elected a Fellow of the Linnean Society in 1887. He died on February 4th, 1931, at the age of 83.

STEP, EDWARD. Most of our members will be familiar with some of the many excellent and popular works on Natural History written by Edward Step. To these many of us turn when asked to recommend books to beginners in the study of botany. Both illustrations and descriptions are commendably reliable, and as a result the books have been much in demand.

NEW COUNTY AND OTHER RECORDS.

Abbreviations.—*Rep. B.E.C.=Report of the Botanical Society and Exchange Club*; *Trans. Bot. Soc. Edin.=Transactions of the Botanical Society of Edinburgh*; *Wats. B.E.C.—Report of the Watson Botanical Exchange Club*; *Devon. Tr.=Transactions of Devonshire Association of Science, &c.*; *Journ. Bot.=Journal of Botany*; *Nat.=Naturalist*; *N.W. Nat.=North Western Naturalist*, ed., A. A. Dallman; *W.F. Mag.=Wild Flower Magazine*, ed., Mrs Dent; *Fern Gaz.=British Fern Gazette*, ed., F. W. Stansfield; *Rep. Marlb.=Report of the Marlborough College Natural History Society*; *R.I.C.=Journal of the Royal Institute of Cornwall*; *Rep. Winton.=Report of the Natural History Society of Winchester College*; †=Adventive; *=New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names or before a binomial means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Vice-county in *Topographical Botany*; [] enclosing a record mean that confirmatory evidence is needed.

We have to thank the Director of the Royal Botanic Gardens, Kew; Mr J. Fraser, Mr W. O. Howarth, Prof. O. E. Schulz, Dr Probst, Dr Ronniger, Dr E. Almquist, Dr H. Schinz, M. Jaquet, Dr Aellen, Dr Drabble, Mr C. E. Britton, Dr Dahlstedt, M. Patrice Riencourt de Longpré, Col. A. H. Wolley-Dod, Mr I. A. Williams, Dr Zahn, Mr A. R. Horwood, Mr W. Watson, Mr D. Lumb, Mr C. V. Marqaund, Mr P. M. Hall, and others who have rendered critical assistance.

2/4. Thalictrum collinum Wallr. Berry Head, S. Devon, Druce.

2/4(2). T. umbrosum Butcher. Loch an Larige, M. Perth, 1930, Druce.

3/2. Anemone nemorosa L., var. purpurea DC. Wood near Snowshill, E. Gloster, Mrs Milvain.

Var. caerulea DC. Common in woods about Tresillian and other parts of Cornwall, C. Nicholson.

†3/4. A. apennina L. Hasham Hill Park, Stafford, Sir R. Curtis. The Park is practically in a wild state.

†3/9. A. coronaria L. Burton-on-Trent, Staffs, Mr Raybon, ex Sir R. Curtis.

6/3. Ranunculus acer L., var. multifidus DC. Boat of Garten, Easterness; Kinlochewe, W. Ross; Rysa Lodge, Hoy, Orkney, Druce.

Var. Friesianus (Jord.) R. & F. Kirk Bay, South Ronaldshay, Orkney, Druce.

Var. STEVENI (Andrz.) Lange. A starved form, 3-4 inches high, with small flowers, Ben Lawers, M. Perth, DRUCE.

A submerged form of *R. acer* occurred in a pond at Storrington, W. Sussex, J. G. DALGLEISH.

6/5. R. BULBOSUS L. A curious fasciated form, with flat stem nearly an inch across, bearing many small branches with numerous flower-heads, sent from Phillack, W. Cornwall, by R. KEMPTHORNE.

6/7. R. FLAMMULA L., var. OVATUS Pers. Burnham, N. Somerset, ex W. D. MILLER; Loddon Bridge, Berks, DRUCE.

6/13. R. PARVIFLORUS L. Plymouth, S. Devon, 1850, Mrs TOZER. Not in Flora.

[6/20. R. FLUITANS Lam., var. BACHII (Wirtg.). Tamaraceite, Grand Canary, 1929, DRUCE, teste PEARSALL.]

6/22. R. TRICHOPHYLLUS Chaix. Foxcote, Andoversford, E. Gloster, Miss ABELL.

6/24. R. HETEROPHYLLUS Weber. A small pretty form at Wigmore Ash, Berks, 957 ft., DRUCE.

Var. TRIFIDUS Pearsall. Dalton, v.-c. 69, LUMB.

6/25. R. PELTATUS Schrank. "Glabrous carpels," Gangsdown, Oxon, DRUCE.

6/27. R. SPHAEROSPERMUS Boiss. & Bl. Growing in great quantity in the water-cress beds and brook at Ewelme, Oxon, 1931, DRUCE; Cheddar Mill-stream, N. Somerset, 1913, Miss I. M. ROPER, as *peltatus*, var. *penicillatus* (Hiern).

6/30. R. LUTARIUS Bouvet. Near Lands End, W. Cornwall, probably hybridising with *R. hederaceus*, DRUCE.

6/31. R. LENORMANDI F. Schultz. Kirby Moor side, N.-E. Yorks, FLINTOFF.

6/33. R. FICARIA L., var. SINUATUS Horwood. Plymouth, S. Devon, 1854, Mrs TOZER.

FLORE PLENO, Broughton, S. Hants, Miss SALMON; an interesting plant, I saw it, when I was in Japan, growing as a pot plant in the house of the uncle of the daughter of the Mikado.

Var. vel forma LUXURIANS. In marshy ground at Glynde, E. Sussex, DALGLIESH. Growth tall and robust, resembling that of *Caltha palustris*.

7/2. CALTHA RADICANS Forst. Golspie, E. Sutherland, DRUCE, with CORSTORPHINE and Hon. Mrs BARING. A small-leaved plant.

9/2. HELLEBORUS FOETIDUS L. Adventive near Walton, Staffs, Mr RAYBON, ex Sir R. CURTIS; two stations in Cambridge, J. S. L. GILMOUR.

†13/3. Delphinium Ajacis L. Adventive on waste ground near Bideford, N. Devon, Druce; Ivybridge, S. Devon, 1834, Mrs Tozer.

21/2. Papaver Rhoeas L., var. chelidonioides O.K. Clifton, Beds, H. Phillips.
Var. caudatifolium Fedde. Near Lambridge Wood, Henley, Oxon, Druce.

21/3. P. dubium L. Marston Measey, N. Wilts, Druce. P. dubium × Rhoeas = P. Nicholsoni Druce. Waste ground, Brownstone Farm, Brixham, S. Devon, Day.

21/5. P. Argemone L. Near Marazion, W. Cornwall, Druce.

21/6. P. hybridum L. Growing with *P. somniferum*, side of newly-made road, Marazion, W. Cornwall, Druce.

21/10. P. bracteatum Lindl. Walsall, Staffs, ex Sir R. Curtis.

31/1. Capnoides claviculata (L.) Dr. A new locality for a rare Berkshire plant at Bucklebury, Druce, Miss Neild, and Hon. Mrs Baring.

32/4. Fumaria purpurea Pugsley. Ilfracombe, N. Devon, Druce.

35/1. Radicula Nasturtium Druce. Cornwood, Dartmoor, S. Devon, Druce.

35/3. R. amphibia (L.) Dr., var. auriculata (Beck.) Dr. (teste Schulz). Hurst, Berks, Druce.

36/2. Barbarea verna Asch. Malvern Wells, Worcester, Miss Pickard.

36/5. B. intermedia Boreau. St Fagans, Glamorgan, Williams, ex Miss Vachell; Mayfield, E. Sussex, Miss Pickard.

37/1. Arabis hirsuta Scop. Cirencester, E. Gloster, Miss Abell; Loch an Larige, M. Perth, 2600 ft.; Blackhead, Co. Clare, 1930, Druce.

†37/9. A. rosea DC. Dunkeld, E. Perth, M. Wilson.

39/1. Cardamine pratensis L., flore pleno. Fine examples from an orchard at Butler's Court, Alvescot, E. Gloster, R. Staples Brown; Willoughby Waterless, Leicester, H. W. Clear; Lyme Regis, Dorset, Sir M. Abbot Anderson.
Var. Hayneana (Welw.) Schur. Bransil, Hereford, R. F. Towndrow.
Forma lactea Beck. Loddon Bridge, Berks, Druce.

39/2. C. amara L. Barcombe Mills, E. Sussex, Miss Pickard.

43/3. DRABA INCANA L. Loch an Larige, M. Perth, DRUCE, gathered in August 1930, on which Prof. O. E. Schulz remarks "ad var. DIFFUSA Lindbl. vergens." Strong, large, branched plants.

43/4. D. MURALIS L. Garden weed at Tusmore House, Oxon, Hon. Mrs BARING. Fine examples over 12 ins. high.

44/1. EROPHILA VERNA (L.) Meyer. Earl Shilton, Leicester, SOWTER; Four Mile Bridge, Anglesey, DRUCE.

Var. CABILLONENSIS (Jord.) O. E. S. Shotover, Oxon, BEAK; Elsfield, Oxon, 1895; Cothill, Tubney, Berks, 1884, DRUCE.

Var. MAJUSCULA (Jord.) Hauss. [No. 63.] Hitchin, Herts, LITTLE; Lathkill Dale, Derby, PROCTOR.

Var. ACROCARPA (Brenn.) O. E. S. [No. 60.] St Ippolyts, Herts, LITTLE; Earl Shilton, Leicester, SOWTER; Glynde, E. Sussex, Miss PICKARD.

Forma MINUTISSIMA (Griseb.) O. E. S. Winterborne Steepleton, Dorset, DRUCE.

44/2. E. BOERHAAVII (Van Hall) Dum. Andoversford, E. Gloster, Miss ABELL; East Hendred, Berks, DRUCE and LADY DAVY; Circencester, E. Gloster; Wood Eaton, 1884, Stonesfield, Oxon; Cerne Abbas, Dorset, DRUCE; Bampton, Oxon, BEAK; Purwell, Hitchin, Herts, LITTLE; Ketton, Rutland, SOWTER.

Var. VINDOBONENSIS O. E. S. Faccombe, Berks; Helston, W. Cornwall (f. UNIFLORA (Opiz) O. E. S.), DRUCE; near Charterhouse, Mendip, Somerset; Valley Bridge Road, Clifton, near Tickenham, W. Gloster, TRAPNELL.

Var. INFLATA (H. C. Wats.) O. E. S. Stoborough Head, Dorset, Sir M. ABBOT ANDERSON; [69] N. of West Mill, Hitchin, Herts, LITTLE; Burnham, N. Somerset, MILLER; Brackley, Northants, DRUCE; Pendragon Castle, Cumberland: summit of Ingleborough, Yorks, as *uniflora*, TRAPNELL.

Var. DECIPIENS (Jord.) O. E. S. Mt. Caburn, Lewes, Sussex, Miss PICKARD; Hitchin, Wymondley Road, Herts, 1930, LITTLE; Burn of Wasdale, Orkney [Ref. No. 3797] (f. UNIFLORA (Opiz) O. E. S.), Col. H. H. JOHNSTON; Ashbury Ant Heaps, Berks, Miss TODD; Cuddesdon, Oxon (etiam f. *uniflora* (Opiz) O. E. S.), DRUCE.

Var. LINEARIFOLIA O. E. S. Noke, Oxon, 1884, DRUCE.

Var. BRACHYCARPA (Jord.) O. E. S. [No. 51.] Lower Stondon, Beds, LITTLE; Marcham, Frilford, Berks, DRUCE.

Var. MURICOLA (Jord.) O. E. S. Ashbury Ant Heaps, Berks, Miss TODD; Riever Wood, Churn Downs, Berks; Shalbourne, N. Wilts, DRUCE.

44/3. E. PRAECOX (Stev.) DC. Ballyalaban, Co. Clare, O'KELLY, Athenry, Galway, DRUCE.

Var. virescens (Jord.) O. E. S. Duddington Heath, Rutland, Sowter; Water Eaton, Oxon; Yardley Gobion, Barnack, Northants, Druce; Ballycahill, Co. Clare, O'Kelly.

47/2. Hesperis matronalis L. Shalbourne, N. Wilts, Druce.

†48/1. Wilckia maritima Scop. Bideford, N. Devon, Druce.

49/3. Sisymbrium altissimum L. Settle, Yorks, new to v.-c. 64, H. H. Sturdy and J. N. Frankland.

49/4. S. orientale L., var. irioides Thell. Burton-on-Trent, Staffs, Druce.

49/5. S. Irio L. Burton-on-Trent, Staffs, Druce.

†54/1. Brassica oleracea L. Waste ground, Adderbury, Oxon, Druce.

†54/2. B. Napus L., var. syntomocarpa O. E. S. Launcells, Cornwall, Rev. W. W. Mason.
Var. auriculata (DC.). Witley, Surrey, Druce.

†54/4. B. Rapa L., var. Briggsii Wats. Burton-on-Trent, Staffs, Druce.

54/14. B. arvensis Kuntze, var. orientalis (L.) Aschers., sub-var. stricta Celak. Holmbury, Surrey, Castalia, Countess of Granville.
Var. media Achogne. Kingsdown Cliffs, E. Kent, Castalia, Countess of Granville.

†54/16. B. juncea Coss. Near Dover, E. Kent, J. Jacob.

†54/20. B. gallica (Willd.) Dr. Waste ground near Settle, Yorks, new to v.-c. 64, Sturdy and Frankland.

54/22. B. incana (L.) F. Schultz, forma glabrescens (Cosson) O. E. S. Burton-on-Trent, Staffs, Druce.

55/1. Diplotaxis tenuifolia (L.) DC. Dartford By-pass Road, W. Kent, Lady Baker.

†56/2. Eruca Eruca (L.) Dr., var. eriocarpa (Boiss.) Post. Adventive, Burton-on-Trent, Staffs, July 1930, Druce.

(All the Bursae have been kindly determined by Dr E. Almquist.)

59/2. Bursa abscissa (E. At.). Stenness, Pomona, Orkney, 1931, Druce.

59/4. B. batavorum (E. At.). Dashwood Hill, Bucks; Goring, Oxon; Hayle, W. Cornwall; Rysa, Hoy, Orkney, Druce; Stanton Moor, Derby, 900 ft., Proctor.

59/7. B. BRITTONII (E. At.). Stanton Moor, Derby, 900 ft., PROCTOR; Cardiff, Glamorgan, DRUCE.

59/9. B. DRUCEANA (E. At.). Ledbury, Hereford, DRUCE.

59/10. B. GALLICA (E. At.). Near Goring, Oxon; Dashwood Hill, Bucks, DRUCE.

59/12. B. GROSSA (E. At.). Wilbury Hill, Herts, H. PHILLIPS.

59/15(2). B. LAEVIGATA (E. At.). Hayle, W. Cornwall; Marston, Oxon, DRUCE; Shavington Avenue, Chester, June 1930, WATERFALL.

59/20. B. PATAGONICA (E. At.). Reading, Berks, DRUCE.

59/26. B. TREVIRORUM (E. At.). Beaulieu, S. Hants, H. PHILLIPS; Shavington Avenue, Chester, June 1930, WATERFALL.

59/27. B. TURONIENSIS (E. At.). Stevenage, Herts, H. PHILLIPS; Lead Workings, Masson Limestone, Derby, 1000 ft., PROCTOR; Golspie, E. Sutherland; Torridon, W. Ross, DRUCE and CORSTORPHINE.

59/28. B. VIMINALIS (E. At.). Cabbage field, Wilbury Hill, Herts, H. PHILLIPS.

60/1. CORONOPUS DIDYMUS Sm. Hayle, W. Cornwall, DRUCE.

61/3. LEPIDIUM DRABA L. Hayle, W. Cornwall, R. KEMPTHORNE.

†61/8. L. PERFOLIATUM L. Near Dover, E. Kent, J. JACOB.

†61/20. L. VIRGINICUM L. [Ref. No. 324.] Cosham, S. Hants, HALL, as *ruderale*. See *Rep. B.E.C.*, 222, 1929. Waste ground, Settle, Yorks, STURDY and FRANKLAND.

†61/22. L. DENSIFLORUM Schrad. Tenby, Pembroke, Miss TODD; Par, E. Cornwall, L. T. MEDLIN, ex THURSTON.

†61/28. L. BONARIENSE L. Ascot, Berks, DRUCE.

†65/2. IBERIS UMBELLATA L. Waste ground, Bideford, N. Devon, DRUCE.

†70/1. VOGELIA PANICULATA (L.) Hornem. Dover, E. Kent, J. JACOB.

†76/3. RAPISTRUM RUGOSUM (L.) All. Burton-on-Trent, Staffs, DRUCE.

80/2. RAPHANUS MARITIMUS Sm. Kilcreggan, Dumbarton, Miss G. YOUNG; Llanstephan, Carmarthen, Hon. Mr JUSTICE TALBOT.

88/4. VIOLA RIVINIANA Reichb., forma NEMOROSA N. W. & M. Lane near Amberley, West Sussex, HALL.

88/6. V. canina L. × Riviniana Reichb., forma minor Murb. Box Hill, Surrey, Hall. Possibly *canina*, var. *ericetorum* Reichb. × *Riviniana*, var. *diversa* Greg. Stenness, Orkney, Druce.

88/8. V. odorata L., type. Maidencombe, S. Devon, Hall.

Var. dumetorum (Jord.). Stoke-in-Teignhead, Ashton, etc., S. Devon, very frequent, Hall.

Var. subcarnea (Jord.). Maidencombe, S. Devon, in an orchard, Hall.

Var. sulfurea (Car.) R. & F. Near Ashton in Teign valley, S. Devon. Native in this station, Hall.

88/9. V. hirta L. × odorata L. Maidencombe, Stoke-in-Teignhead, Ashton, and elsewhere in S. Devon, very frequent and variable, Hall; Outershaw, Yorks, Druce.

[The Pansies have been determined by Dr E. Drabble.]

88/19. V. Lejeunei Jord. Very abundant and beautiful in oat crops at Rysa Lodge, Melsetter, etc., Hoy, Orkney, Druce.

88/20. V. Lloydii Jord. Pusey, Berks, Druce.

88/22. V. agrestis Jord. Budleigh Salterton, S. Devon; Newquay, Hayle, W. Cornwall; Minchinhampton, W. Gloster, Druce.

88/23. V. segetalis Jord Foxcote, Andoversford, E. Gloster, Miss Abell.

*88/24. V. latifolia Drabble. Burnham, Bucks; Gangsdown, Oxon, Druce.

88/34. V. Curtisii Forst. Saunton and Braunton, N. Devon, Druce.

*†88/36. V. hortensis. Waste ground, Bideford, N. Devon, Druce.

†94/5. Gypsophila elegans M. Bieb. Welwyn, Herts, H. Phillips.

95/1. Saponaria officinalis L. Burnham, Bucks, Basden.

Var. flore pleno. Frome, N. Somerset, H. W. Clear.

†96/6. Silene quinquevulnera L. Alien, Warwick, B. King.

†96/16. S. dichotoma Ehrh. Near Exeter, S. Devon, Col. Watts.

†96/20. S. Armeria L. Welwyn, Herts, H. Phillips.

98/9. Lychnis Githago (L.) Scop. A few large specimens in an oatfield, Lyness, Hoy, Orkney, shown to me by Miss Olivia Baring, Druce.

*100/1. CERASTIUM ERECTUM (L.) C. & G. St David's, Pembroke, Miss GREEN, ex B. REYNOLDS.

†100/12. C. TOMENTOSUM L. Shalbourne, N. Wilts, DRUCE.

101/6. STELLARIA DILLENIANA Moench, var. PARVIFLORA (Kl. & Richt.) Dr. The green leaved plant. Lichfield, Staffs, R. C. L. BURGES.

103/2. SAGINA SUBULATA (Sw.) Presl. Hayle, W. Cornwall; *Hoy, Orkney, DRUCE.

104/1. SPERGULA ARVENSIS L. Hayle, W. Cornwall; luxuriant plants at Farnham, Bucks, DRUCE; Lydford, Somerset, 1850, Mrs TOZER.

104/2. S. SATIVA Boenn. Rysa, Hoy, Orkney, the prevailing form, DRUCE.

†108/1. CLAYTONIA SIBIRICA L. Lichfield, Staffs, Sir R. CURTIS; Kirkstone Pass, Westmorland, Miss THOMPSON.

109/1. MONTIA FONTANA L. Dalwhinnie, Easterness, CORSTORPHINE and DRUCE; Fairy Glen, Hoy, Hon. Mrs BARING.

110/1. TAMARIX GALLICA L. Rock, E. Cornwall, DRUCE.

112/1. HYPERICUM ANDROSAEMUM L. Woody Bay, N. Devon, DRUCE.

†115/2. ALTHAEA HIRSUTA L. Burton-on-Trent, Staffs, Sir R. CURTIS.

117/1. MALVA MOSCHATA L., var. GERANIIFOLIA W. & L. (fl. alba). Stoke Court, Bucks, BASDEN.

†117/4. M. PUSILLA Sm. Ryde, Isle of Wight, 1929, LONG; near Dover, E. Kent, JACOB; Great Oakley, Hants, RAYNER. The last was doubted by several botanists and at Zurich they queried it × SYLVESTRIS, but neither Mr E. G. Baker or myself saw any evidence of a hybrid, and we name it as above.

Var. LASIOCARPA C. E. S. (det Drabble). Great Oakley, Hants, Dr D. H. SCOTT.

†117/8. M. PARVIFLORA L. Welwyn, Herts, PHILLIPS; Newport, Isle of Wight, Miss REYNOLDS, ex LONG; Belstone, S. Devon, 1930, Rev. H. H. HARVEY.

†123/5. TILIA PETIOLARIS DC. A large tree in a hedgerow, Lindfield, E. Sussex, Miss PICKARD.

124/1. RADIOLA RADIOLA (L.). Logan, E. Cornwall; Rackwick, Hoy, Orkney, DRUCE.

*†127/2. GERANIUM VERSICOLOR L. Littlehaven, Pembroke, B. LLOYD.

127/14. G. ROBERTIANUM L., var. LITTORALE Rouy. Drummore, Wigtown, DRUCE.

128/3. ERODIUM CICUTARIUM L'Hérit. Penzance, W. Cornwall, DRUCE, teste DRABBLE.
Var. PIMPINELLIFOLIUM (Sibth.). Rock, E. Cornwall, DRUCE.
Var. LEBELII (Jord.). Dawlish Warren, S. Devon, Major ORME.

†132/3. OXALIS STRICTA L. Farnham Common, Bucks, E. B. BASDEN.

†133/3. IMPATIENS PARVIFLORA DC. Farnham Royal, Bucks, E. B. BASDEN; *Lichfield, Staffs, Sir R. CURTIS.

†133/4. I. GLANDULIFERA Royle. Budleigh Salterton, S. Devon, DRUCE and Major ORME; Melsetter, Hoy, Orkney, DRUCE.

137/1. EVONYMUS EUROPAEUS L., var. LEUCOCARPUS Druce. Side of old Canal, Winchester, S. Hants, S. A. MCDOWELL.

138/1. RHAMNUS FRANGULA L. On shingly side of river at Strathorrin, E. Ross, DRUCE and CORSTORPHINE.

150/1. CYTISUS SCOPARIUS (L.) Link. Magnificent bushes, 12 feet high, near Faccombe, Berks, shown to me by the Hon. Mrs G. BARING, DRUCE.

153/1. MEDICAGO FALCATA L. *Hildersham, Cambridge, Miss TODD; Avonmouth, W. Gloster, EVANS.

153/4. M. HISPIDA Gaertn. Adventive, Burton-on-Trent, Staffs, DRUCE.
Var. DENTICULATA (Willd.). Kenilworth, Warwick, J. LAMB.
Var. APICULATA (Willd.). Thetford, W. Norfolk, Miss TODD.

153/7. M. LUPULINA L., var. WILLDENOWIANA Koch (det. Drabble). Henfield, W. Sussex, E. PAYNE.

155/2. TRIFOLIUM PRATENSE L., var. LEUCOCHRACEUM A. & P. Nelson, Lancs, TURNER.

155/7. T. ARVENSE L., var. STRICTIUS Koch. Avonmouth, W. Gloster, EVANS; Maulden, Beds, M. BROWN and J. E. LITTLE, det. DRABBLE.

†155/32. T. ALEXANDRINUM L. Burton-on-Trent, Staffs, DRUCE. Named by Dr SCHINZ.

†155/37. T. RESUPINATUM L. SUAVEOLENS mod. PARVIFLORA, teste P. DE RIENCOURT. Burton-on-Trent, Staffs, DRUCE.

160/6. LOTUS TENUIS W. & K. Newquay, W. Cornwall, DRUCE.

†166/6. ASTRAGALUS ODORATUS Lam. This is the *A. boeticus* L. of Burton-on-Trent and Bath. where it still persists, teste Dr SCHINZ.

†170/1. CORONILLA VARIA L. Coomb Down, Bath, N. Somerset, Sir M. ABBOT-ANDERSON.

173/1. ONOBRYCHIS ONOBRYCHIS (L.) Moreton Hampstead, S. Devon, 1850, Mrs TOZER.

176/3. VICIA CRACCA L., var. ELEGANS Dr. Burton-on-Trent, Staffs, DRUCE.

†176/5. V. VILLOSA Roth. Sharpness, W. Gloster, Miss TODD; Chandler's Ford, S. Hants, coll. F. ESCOMBE; comm. HALL.

176/12. V. SATIVA L., var. MACROCARPA Moris. In a corn crop at Melsetter, Hoy, Orkney, DRUCE. This variety has exceptionally large flowers. Det. E. DRABBLE.

†178/1. LATHYRUS LATIFOLIUS L. Salt Hill, Bucks, E. B. BASDEN.

*178/3. L. TUBEROSUS L. Old quarries, Slinfold, W. Sussex, P. G. BEAK.

183/2. PRUNUS PADUS L. Planted, Shotover, Oxon, Miss PAINE.

184/5. SPIRAEA DOUGLASII Hook. Kinlochewe, W. Ross, DRUCE and CORSTORPHINE.

[All the RUBI have been kindly determined by Mr WM. WATSON.]

*185/2. RUBUS NESSENSIS W. Hall. Low Garden, Den of Airlie and below Reekie Linn, Angus, July 1927, CORSTORPHINE. First certain record for Angus.

185/4. R. ROGERSII Linton. Abundant on Greenham Common, Berks, June 1931, DRUCE; *roadside near Newtyle, Angus, July 1926, CORSTORPHINE.

185/11. R. CARIENSIS Rip. & Genev. Corfe Common, Dorset, 1916, CUMMING, as *cyclophyllus*.

185/13(2). R. LAETUS W. Wats in Journ. Bot., 344, 1930. Near Llanwnda Station, Carnarvon, August 1889, J. E. GRIFFITH, as *argentatus* P. J. M.; Siliwen Woods, Bangor, Carnarvon, June 1896, J. E. GRIFFITH, as *mollissimus* Rogers, teste W. M. R.; Gowertar to Penclawdd, Glamorgan, July 1892, E. F. LINTON, as *gratus* Focke; Beauly, Easterness, August 1889, DRUCE.

185/14. R. IMBRICATUS Hort, var. LONDINENSIS Rogers. Boldu Wood, New Forest, S. Hants, 1907, CUMMING; [Ref. No. 245] field border near Perranzabuloe Church, W. Cornwall, August 1923, F. RILSTONE, as *ramosus* Briggs. See *Rep. B.E.C.*, 433, 1930.

185/14(2). R. INCARNATUS P. J. M. Northleigh, Oxon, DRUCE, as *thyrsoideus*, det. W. M. R.

185/16. R. CARPINIFOLIUS Weihe. Boars Hill, Berks, 1925, DRUCE, as *criniger* Lint., det. RIDDELSDELL; ditto [Ref. No. 1372], H. J. RIDDELSDELL; near Llandudno, Carnarvon, 1931, H. FOSTER.

185/17. R. INCURVATUS Bab. Bangor, Carnarvon, July 1904, A. LEY, as *hesperius* Rogers, forma; Tadmarton, Oxon, DRUCE.

185/18(3). R. PERARMATUS W. Wats. in Rep. B.E.C., 424, 1930. Aconbury, Hereford, September 1904, A. LEY, as *Salteri*.

185/20. R. CRYPTADENES Sudre. Killibury Camp, E. Cornwall; Bideford, N. Devon; Cornwood, S. Devon, DRUCE.

185/20. R. BIPARTITUS Boul. & Bouv. [Ref. No. 2050.] Witley, Surrey, July 6, 1897, E. S. MARSHALL.

185/21. R. OPLOTHYRSUS Sudre. Midhurst and Burton, Sussex, 1931, WATSON. N.C.R.

185/24. R. OXYANCHUS Sudre. Poole Harbour, Dorset, 1907, W. M. ROGERS, as *nemoralis* P. J. M.; Wood Perry, Oxon, DRUCE ("I think *rhomboidalis* Weihe"—W. M. R.).
Var. SILURUM (Ley). Cwn Nees, Radnor, 1908, CUMMING; Peat Moor, north of Shapwick, N. Somerset, September 9, 1891, J. W. WHITE, as *cariensis* R. & G.

185/25. R. CARDIOPHYLLUS L. & M. Clifton Down, Bristol, W. Gloster, August 4, 1907, J. W. WHITE, as *rhamnifolius*; Bracknell, Berks, 1931, DRUCE.

185/26. R. SCHEUTZII Lindeb. Saintfield, Co. Down, August 2, 1902, C. H. WADDELL, as *leucostachys* forma. The Rev. W. M. Rogers remarked of this, "An abundant form in Co. Down and in E. Armagh . . . ." New to Ireland. Kelso, Roxburgh, 1910, Miss I. M. HAYWARD.

185/27. R. BAKERI F. A. Lees. Brailsford, S. Derby, August 1888, W. R. LINTON, as *leucandrus* Focke. "Very near my *leucandrus*, which has, however, white flowers."—Dr FOCKE.

185/28. R. DUMNONIENSIS Bab. Rempstone Heath, Dorset, 1916, CUMMING, as *rusticanus* × *leucostachys*, teste W. M. R.; Fairmile Common, Surrey, 1903, A. H. WOLLEY-DOD, as *thyrsoideus* Wimm. ?First correct record for Surrey.

185/29. R. POLYANTHEMUS Lindeb. Old quarry on Howle Hill, near Ross, Hereford, July 1859, W. H. PURCHAS. "I think this is *R. carpinifolius*."—Prof. BABINGTON. "*R. rhombifolius* Weihe or very near it."—Dr FOCKE. (See *Rep. B.E.C.*, 104, 1880.) [Ref. No. 2194.] Boxted Heath, N. Essex, August 5, 1924, G. C. BROWN, as "? *R. Questierii* L. & M."

185/31. R. LINDEBERGII P. J. M. Blairgowrie, E. Perth, 1899, DRUCE, as *danicus*, det. W. M. R.; *north side of Forfar Loch, Angus, September 1931, CORSTORPHINE.

Forma UMBROSA. Threlkeld, Keswick, Cumberland, July 1906, W. M. ROGERS, as *lacustris* Rogers; coppices at Glencoign, west bank of Ullswater, Cumberland, August 1917, S. H. BICKHAM, as *lacustris* Rogers. (*R. lacustris* Rogers is in Mr Watson's opinion only the form which *R. Lindebergii* assumes in shade.)

185/33. R. MERCICUS, var. BRACTEATUS Bagnall. Hermitage, Berks, DRUCE, ? N.C.R.; the Boar's Hill plant so identified being *R. egregius* Focke.

185/34. ? R. CHLOROTHYRSUS Focke. S. Briavels, W. Gloster, September 1903, A. LEY, as *macrophylloides* Génév.

185/35. R. VILLICAULIS Koehl. Banks of the Halthwistle Burn, between South Tyne Colliery and Lees Hall, Haltwhistle, Northumberland, October 1896, C. BAILEY, as allied to *macrophyllus* W. & N., teste W. M. R.; Cooper's Hill, E. Gloster, July 10, 1920, H. J. RIDDELSDELL, as *hirtifolius*, var. *mollissimus* Rogers.

Var. INSULARIS (Aresch.). Bank, Brecon Road Station, Radnor, August 1898, A. LEY, as *villicaulis* Koehl. type, teste W. M. R.; Duckington Dingle, Cheshire, August 12, 1907, [No. 1637], A. H. WOLLEY-DOD, as *hypoleucus* forma.

185/35(2). R. RECTANGULATUS Maass. Woodlands, Dorset, July 1893, R. P. MURRAY, as *R. stereacanthus* P. J. M., *Rep. B.E.C.*, 1893. (*R. stereacanthus* perhaps = *R. rectangulatus*; see *Rep. B.E.C.*, 1931.)

185/37. R. SELMERI Lindeb. Southbourne, Sussex, 1919, CUMMING, as *nemoralis*, det. RIDDELSDELL; Falls of Leny, E. Perth, 1920, Miss I. M. HAYWARD.

185/40. R. RHOMBIFOLIUS W. & N. Boar's Hill, Berks, 1925, RIDDELSDELL & DRUCE; Shotover, Oxon, 1896, DRUCE. "I have seen a specimen of *R. vulgaris*, var. *rhombifolius* W. & N., collected by G. Braun off the Lias near Volmerdingsen in Weihe's district, and these specimens from Boar's Hill and Shotover are identical with it. Rogers' and Riddelsdell's '*R. incurvatus*, var. *subcarpinifolius*,' is thus the true *R. rhombifolius* Weihe & Nees."—WATSON. Banbury, Oxon, 1899; Derrynane, Co. Kerry, 1906, DRUCE; valley above Lower Wych, Cheshire, August 1903, A. H. WOLLEY-DOD, as *silvaticus* W. & N., teste W. M. R.; near the Chequers, Bucks, DRUCE, as *Selmeri* Lind., teste W. M. R.

Forma UMBROSA. Royal Common, Elstead, Surrey, 1908, CUMMING, as ? *Salteri*.

Forma APRICA. Vron, N. Radnor, 1908, CUMMING; Enborne Street, Berks, DRUCE; Boar's Hill, Berks, 1894, Dr FOCKE, as *pyramidalis*.

185/41(2). R. SCIAPHILUS Lange. Llanwrtyd, Brecon, July 13, 1896, A. LEY as *hirtifolius* M. & W.; Ludford, Hereford, September 6, 1894, A. LEY as *hirtifolius* M. & W.; Biddulph Hall, Staffs, August and September 1889, W. H. PAINTER as *pyramidalis*, teste FOCKE.

185/42. R. LEUCANDRUS Focke (assuming that the flowers were white). Parkstone, Dorset, July 11, 1900, W. M. ROGERS as *leucanthemus* P. J. M.

185/43. R. RAMOSUS Briggs. Bransgore, S. Hants, June 1905, coll. H. FISHER, comm. W. M. ROGERS as *leucandrus* Focke.

185/45(3). R. PROPINQUUS P. J. M. Les Marais et Fauvie, Jersey, 1897, W. M. ROGERS as a weak form near type *Radula* Weihe; "Exactly the same as the Herefordshire '*R. argentatus*' of the Set of British Rubi, No. 30," WATSON. Pengethley, Hereford, August 1891, A. LEY; St Andrews, Guernsey; Moreton Hampstead, S. Devon, June 1911, DRUCE.

185/47. R. ULMIFOLIUS Schott, var. CONTRACTIFOLIUS (Sudre). Newnham, Northants; Curridge, Berks, DRUCE.

185/49. R. HEREFORDENSIS Sudre. Bishop's Wood Estate, Ross, Hereford, 1907, CUMMING as *glabratus*; May Hill, W. Gloster, 1908, CUMMING; Wenlock Edge, Shropshire, August 4, 1904, A. LEY as *lasioclados* Focke, teste W. M. R.

185/49(2). R. CURVISPINUS W. Watson. Road from Christchurch to St Catherine's Hill, S. Hants, 1907. CUMMING as *dumnoniensis*.

185/52. R. LENTIGINOSUS Ed. Lees. Near Llanberis, Carnarvon, September 1887, J. E. GRIFFITH as *rubicolor* Blox. MS., teste BABINGTON; May Hill, W. Gloster, 1900, CUMMING, specimens with stamens 7-8 mm. long, a good deal exceeding the styles. The type has stamens half as long as the styles, but a form is also frequent with the stamens of the same length as the styles.

*185/53(2). R. SCANICUS Areschoug. See *Rep. B.E.C.*, 783, 1928. Burnham, Bucks, 1931, DRUCE. The second station in Great Britain.

185/54. R. MOLLISSIMUS Rogers. [Ref. No. 422.] Rocky Hillside, Langreek, Polperro, E. Cornwall, 1926, F. RILSTONE as *hirtifolius*, det. by RIDDELSDELL as forma.

185/56. R. SCHLECHTENDALII Weihe. ("Not the var. *anglicanus* of Sudre, but Weihe's type = Questier's *R. Schlechtendalii* in Billot

Exsicc. No. 1469, Aisne."—Wm. Watson). Wing, Bucks, DRUCE, thought by W. M. Rogers to be *rhombifolius* Weihe.

185/59(2). R. CRUDELIS W. Watson (sp. ined.) = R. COLEMANNI Rogers pro max. parte, non Bloxam. Near Ilfracombe, N. Devon, July 1931, DRUCE.

185/62. R. SUBINERMOIDES Druce. Forest of Dean, W. Gloster, 1908, CUMMING.

185/63. R. ADSCITUS Génév. Grisnez, Jersey; Alderney, det. as *andegavensis* Bouv. by FOCKE; Sark, 1906, as *macrophylloides*; probably this, Shotover, Oxon, DRUCE.

185/65. R. IRICUS Rogers?. Par, E. Cornwall, 1931, DRUCE.
Var. MINOR R. & R. Perhaps this, Lydford, N. Somerset, CUMMING.

185/66. R. PYRAMIDALIS Kalt. Middle Marwood, N. Devon, July 1892, W. H. PAINTER as *macrophyllus* W. & N.

185/66. R. HIRTIFOLIUS M. & W. (" Not the bramble described under that name in the *Handbook*, which is, I think, *R. sciaphilus* Lange; nor the bramble issued under that name in the Set of British Rubi, which is *R. melanocladus* Sudre, but the plant of Müller and Wirtgen. I have gathered it on Mousehold Heath near Norwich, and described it in the *London Naturalist* for 1929."—WATSON). Hedges, Nantymwyn, Carmarthen, August 1897, A. LEY as *R. Questierii* L. & M., teste W. M. R.; Holm Lacey, Hereford, July 27, 1897, A. LEY as *danicus*; Ystalyfera, Glamorgan, July 11, 1906, H. J. RIDDELSDELL, as *lasioclados*, var. *longus* Rogers & Ley; Llandewi-Skirrid, Monmouth, August 29, 1909, A. LEY as *lasioclados*, var. *longus* Rog. & Ley.

185/67. R. VESTITUS W. & N. Bourton Woods, E. Gloster, August 18, 1921, RIDDELSDELL, as *anglosaxonicus*, var. *vestitiformis* Rogers.

185/69. R. LEUCOTRICHUS Sudre, forma UMBROSA. Colwyn Bay, Denbigh, September 2, 1915, S. H. BICKHAM.

*185/71. R. MACROTHYRSUS Lange. Berehaven, Co. Cork, DRUCE. New to Ireland.

185/72. R. LASIOCLADOS Focke. Mr Watson suggests that a plant from Alderney, DRUCE, is this.
Var. ANGUSTIFOLIUS Rogers. Near this, Dinmore, Hereford, September 22, 1892, A. LEY, as *pyramidalis* var.; Tidenham Chase, W. Gloster, August 31, 1910, A. LEY, as *iricus*; Tilehurst, Berks, DRUCE.

185/73. R. EGREGIUS Focke (type). Sandhurst, Berks, 1895, DRUCE.
*Var. EFFEMINATUS Focke (founded on examples gathered in Oxfordshire). [Ref. No. 1183.] Shotover Hill, Oxon, July 1925, H. J. RIDDELS-

DELL, as *hesperius* Rogers. [Ref. No. 1002], Tremadoc, Carnarvon, September 1922, W. C. BARTON, as *hesperius* Rogers; [Ref. No. 1986], Stanway, N. Essex, 1923, G. C. BROWN, as *criniger* Linton, teste RIDDELSDELL; Beacon Hill Woods, Monmouth, July 4, 1893, A. LEY, as *orthoclados*; Open Heath, Beacon Hill, Monmouth, July 23, 1897, A. LEY, as *orthoclados* var.; near Perfeddcoed, Bangor, Carnarvon, October 1891, J. E. GRIFFITH, as *vestitus* var., fide Dr FOCKE.

185/80. R. MUCRONIFER Sudre. Near Presteign, Hereford, July 27, 1897, A. LEY, as *danicus*; specimens from a plant brought from the original station and grown at Astonfield Vicarage, October 1888, W. H. PURCHAS, as *Purchasii* Blox. (In the *Handbook* Rogers conjectures that *R. Purchasii* was a "weakly armed local form of *R. Drejeri*."). *Dun, Angus, August 1917, CORSTORPHINE.

185/81. R. MUCRONATOIDES Ley. Bolston Wood, Hereford, July 31, 1907, A. LEY, as *Lettii*.

185/83(2). R. GELERTII Frider. Shotover, Oxon, DRUCE. The true plant.

185/83(3). R. CHAEROPHYLLOS Sagorski & W. Schultze. *Brodie, Nairn, DRUCE. The Rev. W. M. Rogers said of it, "*R. mucronatoides* Blox., a var. common in the Callander neighbourhood, West Perth." "This is an abundant plant in the Forest of Blean to the west of Canterbury, flowering in the last week of July. I am glad to see it from so far north."—W. WATSON *in lit.* *Cwm Einon, Cardigan, July 18, 1907, W. H. PAINTER, as *Lettii*.

185/84. R. APICULATUS Weihe. [Ref. No. 405.] Roadside near Trevarder, between Polperro and Polruan, E. Cornwall, 1926, F. RILSTONE, as *hystrix*, teste RIDDELSDELL; Twelve O'clock Drive, Warwick, 1920, CUMMING, as *Radula*; coppice near Castle Place, Pulverbach, Salop, 1895, R. DE G. BENSON, comm. W. M. ROGERS, as *Borreri* forma; [Ref. No. 408], roadside near Sandplace Station on way to Dunloe, E. Cornwall, 1926, F. RILSTONE, as *Borreri*, teste RIDDELSDELL.

Var. CURVIDENS (Ley). Twelve O'clock Drive, Coombe Wood, Warwick, 1908, CUMMING, as an uncharacteristic form of *R. dasyphyllus* W. M. R.; near Llanberis, Carnarvon, August 1892, J. E. GRIFFITH, as *pyramidalis* Kalt., teste W. M. R.; same place, 1899, DRUCE; Tidenham Chase, W. Gloster, July 28, 1917, RIDDELSDELL, as *leucostachys* × *rusticanus*.

Var. VESTITIFORMIS (Rogers). Woods, Dinmore, Hereford, September, 1892, A. LEY, as *pyramidalis* var. ?; in lane to Potterne, south of Devizes, N. Wilts, July 1893, C. BAILEY, as *pyramidalis*; [Ref. No. 584], Portmadoc, Carnarvon, September 6, 1922, W. C. BARTON, as *leucostachys*, var. *macrothyrsus* Lange; Mounton, Monmouth, October 1891, W. A. SHOOLBRED, as *adscitus* Génév.; Ulverscroft Lane, near Mill, Leicester, August 1, 1904, W. BELL, as *leucostachys*, teste W. M. R.; Glynhir, Carmarthen, July 16, 1896, A. LEY, as *gymnostachys* Génév., teste W. M. R.; near Brynllwyd, Bangor, Carnarvon, September 1886, J. E. GRIFFITH, as *leucostachys* var.; Bolston Wood, Hereford, August 24, 1901, A. LEY, as near *Lettii*, teste W M. R.; Nuneham, Oxon, DRUCE (confirms the doubtful record in *Fl. Oxon.*, 140, 1927); Harley Wood, Oxon, 1884; Bagley, Berks, 1882; Hunsbury Hill, Northants, DRUCE; Ashby St Ledgers, Northants, August 6, 1921, RIDDELSDELL, as *lasioclados*, going off towards this.

*185/84(2). R. BADIUS Focke. See Rep. B.E.C., 436, 1930. Coggs Wood, Oxon, DRUCE. "I suppose *hirtifolius* M. & W."—W. M. ROGERS *in lit.* *Hyde Heath, Bucks, DRUCE—"I suppose a bald-stemmed specimen of *R. pyramidalis* Kalt."—W. M. ROGERS *in lit.* Lane by Swithland Wood, and Cross Lane by Lea Lane, Leicestershire, August 5, 1899, W. M. R. as *R. Salteri*.

185/85. R. FURVICOLOR Focke. Dalmally, Argyll, 1898, DRUCE.

185/86. R. INFESTUS, var. VIRGULTORUM (Ley). Sutton Park, Warwick, 1895, DRUCE, as *infestus*, teste W. M. R.

185/88. R. BORRERI Bell Salt. [Ref. No. 404], Polperro, E. Cornwall, June 22, 1926. F. RILSTONE, as *mucronatoides* Ley, det. as forma by RIDDELSDELL; Tilehurst, Berks, DRUCE, "Recalls both *Boraeanus* and my *Griffithianus*, without appearing to quite suit either."—W. M. R.; Cave Hill, Antrim, 1898, DRUCE, as *pyramidalis*, det. W. M. R.; Osmaston, near Shirley, Derby, August 26, 1891, W. R. LINTON, as *vestitus* f.

Var. DENTATIFOLIUS Briggs. Perranarworthal, W. Cornwall, July 15, 1911, F. HAMILTON DAVEY, as *plinthostylus*.

185/89. R. DREJERI G. Jensen. Probably this, Barnwell Wold Wood, Northants. 1918, CUMMING, as *Bloxamianus*; Bradley, S. Derbyshire, September 20, 1888, W. R. LINTON, as *Purchasii*.

Var. LEYANUS (Rogers). *Dun's Dish, Angus, August 1927, CORSTORPHINE. New to Scotland. Bank by stream, Polperro, E. Cornwall, July 28, 1922, F. RILSTONE, as *Gelertii*, det. RIDDELSDELL; Whiteleigh near Tamerton Foliott. S. Devon, August 1888, T. R. ARCHER BRIGGS, as *Purchasii*; Iver, Bucks, 1898, DRUCE, as *mucronatus*, det. W. M. R.; ? near Grasby, N. Lincoln, A. LEY, as *podophyllus* P. J. M.

Var. HIBERNICUS (Rogers). Durdham Down, Bristol, W. Gloster, J. W. WHITE, as *R. Drejeri*. New to England.

185/90. R. RADULA Weihe. South Newington Hill, Oxon, 1919, H. J. RIDDELSDELL, as sub-sp. *anglicanus* Rogers; Brewery Field, Penrith Road, Keswick, Cumberland, R. S. STANDEN, as *dasyphyllus*, teste W. M. R.; Kelso, Roxburgh, 1910; Clovenfords high-road near Plantation, Selkirk, 1910, Miss I. M. HAYWARD.

Var. ECHINATOIDES (Rogers). Sibford, Oxon, 1915, H. J. RIDDELSDELL, as *dumetorum* × *echinatus*.

185/91. R. ERICETORUM Lefèv. Between Woodford and Preston Capes, Northants, 1918; Somerleyton, E. Suffolk, 1899, CUMMING.

185/92. R. ECHINATUS Lindley. Ballards Copse, Heyford, and Hook Norton, Oxon, 1919, H. J. RIDDELSDELL, as *Radula*, var. *echinatoides* Rogers; Market Rasen Wood, N. Lincoln, 1907, CUMMING; *Heughead Den, Angus, July 1926, CORSTORPHINE.

185/93. R. RUDIS W. & N. Bishop's Wood Estate, Ross, Hereford, 1907, CUMMING.

185/94. R. CENOMANENSIS Sudre. [Ref No. 431.] Rocky hillside, Langreek, Polperro, E. Cornwall, July 1926, F. RILSTONE, as *scaber*, det. by RIDDELSDELL as forma.

185/99. R. MELANODERMIS Focke. Budleigh Salterton, S. Devon, 1931, DRUCE.

185/99(2). R. HETEROBELUS Sudre. Bank above R. Lugg, near Aymestrey, Hereford, September 9, 1905, S. H. BICKHAM and A. LEY, as *anglosaxonicus* approaching *raduloides*. " = '*R. praeruptorum*' cit. Boulay, Wareham, Dorset, issued as No. 15 in Set of British Rubi, and considered by Rogers 'a very marked plant' in *Journ. Bot.*, 82, 1895 (which it certainly is). It beats me how it came to be confused with the '*R. praeruptorum*' cit. Boulay of Babington Manual, ed. 8, which = *R. pygmaeus* of Bab. Brit. Rubi, and is really *R. hylonomus* M. & L., a Bellardian. In *Journ. Bot.*, 321, 1907, A. LEY records '*R. praeruptorum* Boulay?' for Herefordshire and Worcestershire, 'identical with the Dorset bramble.'"—WM. WATSON, 1932, *in lit.*

185/100. R. BABINGTONII Bell Salt. Hurstmonceux, Sussex, 1899, DRUCE.

185/100(2). R. DIVERSUS W. Watson. Abbey Wood, Okehampton, N. Devon, 1915, CUMMING, as *hirtus* agg.; Brandon Wood, Warwick, 1915, CUMMING, as *hirtus* forma; King's Wood, Yatton, N. Somerset, 1915, MISS I. M. ROPER, as *hirtus*, var. *Kaltenbachii* Metsch.

185/102. R. LEJEUNEI W. & N. Possibly this from Sligo, DRUCE; *Abbey Wood, Okehampton, N. Devon, CUMMING.

*185/104(2). R. RADULICAULIS Sudre. Grays, Oxon, DRUCE. The Rev. W. M. ROGERS thought it recalled *Gelertii*.

185/109(2). R. HYLONOMUS L. & M. *Todenham, E. Gloster, 1915, H. J. RIDDELSDELL, as *hostilis* M. & W.; Bognor Common near Fittleworth, W. Sussex, 1914, CUMMING, as *serpens*.

185/110. R. FUSCUS Weihe. [Ref. No. 1092.] Ardleigh, N. Essex, G. C. BROWN as ? *dumetorum* × *dasyphyllus*; *Badby, Northants, 1921, CUMMING, as *rudis*, det. as *rudis* (with hairy stem) by RIDDELSDELL; Stanford Park, Worcester, August 23, 1910, A. LEY, as *Boraeanus* Génév.

Var. HYPOSERICEUS Sudre. Okehampton, N. Devon, 1931, DRUCE; between Willenhall and Binley, Warwick, 1921, CUMMING, as *anglicanus*; near Chard, S. Somerset, August 19, 1892, R. P. MURRAY, as *macrothyrsus* Lange, teste FOCKE; Glynhir, Carmarthen, July 16, 1896, A. LEY, as *leucostachys*, var. *gymnostachys*; Upper Bangor, Carnarvon, September 10, 1905, S. H. BICKHAM and J. E. GRIFFITH, as *leucostachys*, var. *gymnostachys*.

185/111. R. PALLIDUS Weihe, var. LEPTOPETALUS Rogers. Wood at Graines near Whitbourne, Hereford, 1907, A. LEY, as *viridis* Kalt.

185/114. R. HORRIDICAULIS P. J. M. Wood, Pontyclun, Glamorgan, August 8, 1908, H. J. RIDDELSDELL, as ? *scaber*.

185/115. R. SCABER Weihe. Haydn, Lead Mine, Northumberland, Miss I. M. HAYWARD.

185/118. R. LONGITHYRSIGER Bab. Wood by Titley Station, Hereford, 1908, CUMMING.

185/120. R. FOLIOSUS Rogers. Haydn Bridge, Old Lead Mine. Northumberland, 1913, Miss I. M. HAYWARD.

Var. SALTUUM Focke. Harrow Weald Common, Middlesex, 1883, W. R. LINTON, as *R. Guntheri* Weihe; probably this, Burnham, Bucks, 1931, DRUCE.

185/122. R. ROSACEUS Weihe. Bedham to Fittleworth, W. Sussex, 1914, W. M. & F. A. ROGERS, as *durotrigum* R. P. M.

*Var. PURCHASIANUS Rogers. Lyndhurst, S. Hants, 1919, CUMMING, as *hirtus* forma.

*Var. SCABRIPES (Génév.) Sudre. Coombe Wood, Warwick, 1908, CUMMING, as *rosaceus*; *Seer Green, Bucks, DRUCE.

185/123. R. HYSTRIX Weihe. Abbeywood, Okehampton, N. Devon, 1915, CUMMING, as *Bellardi*, "panicle not typical."—W. M. R.

Forma UMBROSA. Frankton Wood, Warwick, 1908, CUMMING.

Forma INCANA. Brandon Wood, Warwick, 1902, CUMMING, as *viridis*.

185/127. R. HOSTILIS M. & W. Head's Nook, Cumberland, 1913, Miss I. M. HAYWARD.

185/128. R. FUSCOATER Weihe. Wood near Brandon, Warwick, 1913, CUMMING; Nuneham and Bladon, Oxon, DRUCE.

185/133. R. MARSHALLI F. & R. Near Shillingstone, Dorset, CUMMING, as *dumetorum*, var. *diversifolius*.

185/137. R. ANGUSTIFRONS, var. PALLIDISETUS Sudre. Doward Wood, Hereford, 1907, A. Ley and Cumming, as *divexiramus*.

*185/145. R. TERETICAULIS P. J. M. Possibly this, Haywood, Warwick, 1877, J. E. Bagnall, as *Briggsii*, var. *Bagnallii* Blox.; Weekley Hall Woods, Northants, 1916, G. Chester, as *flaccidifolius* P.J.M.; Berechurch, N. Essex, G. C. Brown, as *viridis*, teste Riddelsdell. N.C.R. in each case.

185/149. R. DUMETORUM, var. FEROX Rogers. Near Preston Capes, Northants, 1908, Cumming.

Var. DIVERSIFOLIUS (Lindl.). Doward Wood, Hereford, 1907, Cumming.

Var. CONCINNUS Warren. Hook Norton, Oxon, 1919, H. J. Riddelsdell, as *Balfourianus* Blox.

185/151. R. CORYLIFOLIUS Sm., var. CONJUNGENS Bab. Bircholt, Lincoln, 1907, A. Ley and Cumming, as *podophyllus* P. J. M. forma, det. W. M. R.; Clovenfords, Selkirk, Miss I. M. Hayward; *Will's Braes and Duntrune Den, near Dundee, Angus, September, 1926, Corstorphine.

185/151. R. CORYLIFOLIUS, var. SUBLUSTRIS × POLYANTHEMUS. Brimpton Common, Berks, 1931, Druce. "I have not seen this cross before, but know that both species are a good deal given to crossing. The short, deep red prickles on the flowering branch and clothing of the leaves are evidence of *sublustris*; the leaflets of the stem, of *polyanthemus*."—W. Watson *in lit.*

185/152. R. BALFOURIANUS Blox. Limpsfield Common, Surrey, 1913, H. E. Fox, as *Drejeri*, teste Linton.

185/153. R. CAESIUS L. × CRYPTADENES. [Ref. No. 440.] South Tawton Quarries, N. Devon, 1919, W. C. Barton, as *dumetorum* × ?.

× ULMIFOLIUS. Between Kilsby and Watford, Northants, 1913, Cumming.

*187/2. GEUM INTERMEDIUM Ehrh. Shebeek, Pembroke, C. Oldham and B. Lloyd.

190/8. ALCHEMILLA ALPESTRIS Schmidt. Dalnaspidal, E. Perth, Druce and Corstorphine.

f. VEGETA Jaq. Melsetter, Hoy, Orkney, Druce.

†192/1. ACAENA ANSERINIFOLIA (Forst.) Dr. Naturalised at Budleigh Salterton, S. Devon, where it was shown to me by Major Orme, Druce; Trendlemere Down, S. Devon, E. D. Morgan.

194/6. ROSA CANINA L., var. SPURIA (Puget). Untypical, Godstow, Oxon, Druce.

194/10. R. DUMETORUM Thuill., var. ERECTA W.-Dod. Wytham, Berks, 1930, DRUCE.

194/16. R. AGRESTIS Savi. Birtley, Co. Durham, HESLOP-HARRISON.

194/19. R. SCABRIUSCULA Winch. Marlborough, N. Wilts, Mrs WEDGWOOD.

194/19. R. TOMENTOSA Sm. Frilford, Berks, DRUCE.
Var. DIMORPHA (Déségl.). Princes Risborough, Bucks, 1902, DRUCE.

†194/26. R. RUGOSA Thunb. Sandy coast, Rock, E. Cornwall, DRUCE. The Rev. W. W. Mason had seen it there previously. Sand dunes, Formby, S. Lancs, R. E. D. BAKER.

195/5. PYRUS AUCUPARIA (L.) Ehrh., var. GLABRA (Gilib.) Trautv. Inverness, Mrs WEDGWOOD.

195/9. P. INTERMEDIA Ehrh. Melsetter, Hoy, Orkney, DRUCE; banks of Ness, Inverness, DRUCE and CORSTORPHINE.

195/10. P. PORRIGENS Hedl. ? Brightwell, Oxon. A rather distinct-looking form, practically barren, which DRABBLE says seems nearest to *porrigens* on leaf-characters, DRUCE.

195/13. P. ARIA (L.) Ehrh. Banks of Ness, Inverness, 1931, DRUCE and CORSTORPHINE. Less white under the leaf than our English plant.

195/14. P. LATIFOLIA (Lam.) Syme. Bank of the Ness, Inverness, DRUCE and CORSTORPHINE. We were kindly directed to this locality by Mrs Wedgwood.

†197/2. COTONEASTER MICROPHYLLUS Wall. Woody Bay, N. Devon, DRUCE.

199/24. SAXIFRAGA UMBROSA L. Woody Bay, N. Devon, DRUCE.

211/2. SEDUM RUPESTRE L. Berry Head, S. Devon, DRUCE.

*211/4. S. FORSTERIANUM Sm. Woody Bay, N. Devon, DRUCE. Det. DRABBLE.

*211/7. S. ALBUM L. Nether Bigging, Firth, Orkney, Col. H. H. JOHNSTON.

†211/20. S. STOLONIFERUM S. T. Gmel. Well established at Henfield, W. Sussex, E. PAYNE.

213/1. DROSERA ANGLICA Huds. Pegal Burn, Hoy, Orkney, 1931, DRUCE.

*213/1. D. OBOVATA M. & K. D. ANGLICA × ROTUNDIFOLIA. Holmsley, S. Hants, HALL.

217/1. Callitriche stagnalis Scop., var. serpyllifolia (Kuetz.). Gerrards Cross, Bucks, Druce. Det. Drabble.

219/2. Lythrum Hyssopifolia L. Near Farnham, Bucks, E. B. Basden. A rare plant in Bucks, last seen in the County fifty years ago. I was shown this plant by Mr Basden, Druce.

220/5. Epilobium tetragonum L. Hayle, W. Cornwall, Druce; Burnham, Bucks, Basden.

220/6. E. Lamyi F. Schultz, fide Drabble. Ewelme Churchyard, Oxon, Druce.

220/8. E. roseum Schreb. Thames Bank, Middlesex; Symonds Yat, W. Gloster, Miss Todd.

221/1. Ludvigia palustris (L.) Ell. Shown to me near Lyndhurst, S. Hants, in a new locality hitherto unrecorded, in great abundance, Hall.

†223/1. Oenothera biennis L. Newquay, W. Cornwall, Druce; Maulden, Beds, 1931, Miss M. Brown and J. E. Little.

†240/1. Astrantia major L. Chedworth, E. Gloster, J. E. Spooner.

†240/3. A. maxima Pall. (A. helleborifolia Salisb.) Crianlarich, M. Perth, Mrs Wedgwood.

245/3. Bupleurum rotundifolium L. Newbold on Avon, Warwick, J. Lamb.

247/3. A. nodiflorum (L.) H. G. Reichb., var. ochreatum (DC.) Dr. Hayle, W. Cornwall, Druce. A pretty form.

247/5. A. inundatum (L.) H. G. Reichb. Rackwick, Hoy, Orkney, Druce.

†249/2. Ammi Visnaga Lam. Port Meadow, Oxon, Gambier Parry.

250/3. Carum Petroselinum (L.) B. & H. In great plenty in a lane at Rock, E. Cornwall, Rev. W. W. Mason.

†252/1. Prionitis Falcaria (L.) Dum. Newbold on Avon, Warwick, J. Lamb.

255/2. Pimpinella Saxifraga L., var. dissecta With. Assenton, Oxon, Druce.

261/1. Chaerefolium sylvestre (L.) S. & T., var. angustisectum Druce. This is the prevailing plant of Orkney, Sutherland, Caithness and Inverness. A curious form with narrow leaflets.

265/5. OENANTHE SILAIFOLIA Bieb. Glynde, Sussex, Miss PICKARD.

265/6. O. LACHENALII G. Gmel. Newbold on Avon, Warwick, J. LAMB.

269/1. SILAUM SILAUS (L.) S. & T. Guildford, Surrey, F. CLARKE.

271/1. LIGUSTICUM SCOTICUM L. Aith Head, S. Walls, Orkney, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL.

†275/1. ARCHANGELICA ARCHANGELICA (L.). Canal-side, Warwick Square, N.W.3, Middlesex, DRUCE.

276/3. PEUCEDANUM SATIVUM (L.) B. & H., var. EDULE (DC.). Glynde, E. Sussex, Miss PICKARD.

†276/4. P. GRAVEOLENS (L.). Welwyn, Herts, H. PHILLIPS.

†277/1. HERACLEUM MANTEGAZZIANUM S. & L. Waste ground, Bideford, N. Devon, DRUCE.

*283/2. CAUCAULIS DAUCOIDES L. Settle, Yorks, new to v.-c. 64, H. H. STURDY.

283/8. C. LATIFOLIA L. Maes Howe, Pomona, Orkney, 1931, DRUCE.

284/1. HEDERA HELIX L., var. BOREALIS Dr. Woody Bay, N. Devon, DRUCE.

287/2. SAMBUCUS NIGRA L., var. OVALI-FRUCTU Druce. Westcott Barton, Oxon, DRUCE.
Var. VIRIDIS Ait. Tingley Wood, Herts, Miss M. BROWN and LITTLE.
Var. LACINIATA L. Near Walsall, Staffs, ex Sir R. CURTIS.

287/3. S. EBULUS L. Rock, E. Cornwall, DRUCE.

†289/1. SYMPHORICARPOS SYMPHORICARPOS (L.). Ilfracombe, N. Devon, DRUCE.

296/2. GALIUM MOLLUGO × VERUM = OCHROLEUCUM Wolf. Abundant on the shores of Slapton Lea, S. Devon, DRUCE.

296/8. G. DEBILE Desv. Chudleigh Heathfield, S. Devon, F. M. DAY. Named by R. F. TOWNDROW.

†296/15. G. VALANTIA Weber. Splott, Cardiff, Glamorgan, 1931, Miss VACHELL.

306/3. DIPSACUS SATIVUS (L.). D. FULLONUM auct. Southwick, E. Sussex, E. PAYNE; Burton-on-Trent, Staffs, DRUCE.

312/1c. SOLIDAGO VIRGAUREA L., var. PLUKENETIANA Druce. Very fine specimens at the mouth of Pegal Burn, Hoy, Orkney; small plants at Rackwick, Hoy, Orkney; Saxevord, Lee of Setter, Zetland, DRUCE; Gap of Dramore, Donegal; Easedal, Westmorland, FOX.

318/19. ASTER TRIPOLIUM L., var. GLABER Bolzon. Plymouth, S. Devon, 1850, Mrs TOZER; Rock, E. Cornwall, DRUCE.

334/2. PULICARIA PULICARIA (L.) Karst. Wymondley, Herts, H. PHILLIPS.

†339/4. AMBROSIA TRIFIDA L. Dover, E. Kent, J. JACOB.

341/3. XANTHIUM SPINOSUM L. Hitchin, Herts, H. PHILLIPS.

†354/1. GALINSOGA PARVIFLORA Cav. Mudeford, S. Hants, Miss CAMPBELL; Welwyn, Herts, H. PHILLIPS.

365/7. ACHILLEA NOBILIS L. Avonmouth, W. Gloster, J. EVANS.

368/1. ANTHEMIS TINCTORIA L. Henfield, W. Sussex, E. PAYNE.

370/8. CHRYSANTHEMUM MAXIMUM DC. Farnham Royal, Bucks, BASDEN.

370/15. C. SEROTINUM L. Farnham Royal, Bucks, BASDEN.

371/3. MATRICARIA SUAVEOLENS (Pursh) Buch. Stromness, Orkney, J. SINCLAIR.

378/3. ARTEMISIA VULGARIS L., var. COARCTATA Fors. Lydford, S. Somerset, 1850, Mrs TOZER; Slapton, S. Devon, DRUCE; Lostwithiel, E. Cornwall, DRUCE.

378/7. A. SCOPARIA W. & K.? Avonmouth, W. Gloster, J. EVANS.

378/15. A. ANNUA L. Dorsetshire, Miss ABELL.

378/16. A. BIENNIS Willd. Avonmouth, W. Gloster, J. EVANS.

378/18. A. GNAPHALOIDES Nutt. Avonmouth, W. Gloster, J. EVANS.

383/7. SENECIO SQUALIDUS L. Garston, Liverpool, S. Lancs, W. CHESHER.

383/26. S. SMITHII DC. Mouth of Mill Burn, Mill Bay, Hoy, Orkney, Hon. Mrs G. BARING.

395/3. CARDUUS PYCNOCEPHALUS L. Canvey Island, S. Essex, MELVILLE; Cardiff, Glamorgan, DRUCE.

*396/5. CIRSIUM PRATENSE (Huds.) DC. St Davids, Pembroke, B. LLOYD.

396/6. C. TUBEROSUM (L.) All. Abundant in a field at the foot of the Downs, near Rowde, N. Wilts, where I was shown it in situ by Miss Leake, DRUCE.

396/9. C. PALUSTRE × PRATENSE = C. SPURIUM Delastre. King's Nympton, N. Devon. A root brought into my garden shows that this beautiful hybrid retains all its characters.

†397/2. ONOPORDON TAURICUM Willd. Hove, Sussex, ex DALGLEISH.

*405/8. CENTAUREA OBSCURA Jord., f. RADIATA. Marston Measey, N. Wilts, DRUCE.

405/11. C. NEMORALIS Jord., f. RADIATA. Rock, E. Cornwall, DRUCE.

405/12. C. CYANUS L. In an oat-field, Lyness, Hoy, Orkney, Miss OLIVIA BARING.

406/1. CNICUS BENEDICTUS L. Loudwater, Bucks, DRUCE.

407/1. CARTHAMUS LANATUS L. Avonmouth, W. Gloster, J. EVANS.

(The HIERACIA have been kindly determined by Dr K. H. ZAHN.)

419/1. HIERACIUM PILOSELLA L., var. SUBPILOSUM N. P. Walmer Beach, E. Kent, October 1879, CASTALIA, COUNTESS OF GRANVILLE; Winch Bridge, Durham; Gentian Hill, Galway; Beaumaris, Anglesey, DRUCE.

419/11. H. ANGLICUM Fr., var. GENUINUM Zahn, f. NORMALE Zahn in Engler, p. 186, fig. 17. Tarbert, Harris, 1928; Blackhead, Co. Clare; Loch an Larige, M. Perth; South Burn near Rackwick, Hoy, Orkney, 1931, DRUCE.

Var. CERINTHIFORME Backh. Burn of Quoys, and Mouth of Pegal Burn, Hoy, Orkney, 1931, DRUCE.

419/17. H. CALEDONICUM Hanbury. Near Aith Head, S. Walls, Orkney, 1931, DRUCE.

419/19. H. BOSWELLI Lint. Rannoch, W. Perth, 1930, DRUCE.

419/89. H. SUBLEPISTOIDES (Zahn). Boughrood, Radnor; Woodchester, W. Gloster; near Ross, Hereford, 1931, DRUCE.

419/101. H. INTEGRATUM Dahlst. Forbury Grove, Berks, 1930, DRUCE and Hon. Mrs G. BARING.

419/110. H. SAGITTATUM Lindeb., var. SUBHIRTUM (Hanb.). Riccaldale, Kirby Moorside, N.E. Yorks, FLINTOFF.

419/122. H. DIAPHANOIDES Lindeb., var. APICULATUM Linton. Cwm Dulas, six miles S.E. of Machynlleth, Montgomery, 1926, J. H. SALTER. " (Est transitus *eu-diaphanoides—Alfvengrenii* Dahlst.) involucris pedicellis panepilosis "—Zahn *in lit.*

Var. GENUINUM Zahn, f. SUBMURORUM Zahn in A. & G. Synopsis. Llyn Egnant, 1400 ft., Cardigan, 1926, J. H. SALTER.

419/125. H. LACHENALII Gmel. Chester, 1916, C. WATERFALL (Hb. Druce, ex Mason); Sandyrock, Worcester; Letton, Hereford, 1931; Burton-on-Trent, Staffs, 1930, DRUCE.

419/132. H. PAUCIFOLIATUM Jord. Railway bank, Cinderhill, Nottingham, 1930, R. BULLEY.

419/135. H. DIAPHANUM Fr., var. PSEUDODIAPHANUM (Dahlst.). Meavy, N. Devon, 1931, DRUCE.

419/171. H. SUBRAMOSUM Lönnr. Hawick, Roxburgh, 1930, DRUCE.

419/203. H. GOTHICUM Fr. (EU-GOTHICUM Zahn). Hermitage, Berks, 1931, DRUCE.

419/223. H. SCABRESCENS Dahlst. Hampstead Marshall, Berks, 1931, DRUCE.

419/232. H. LATOBRIGORUM Zahn. Loch an Larige, M. Perth, 1930, DRUCE.

419/242. H. MARITIMUM Hanbury. Aith Hope, S. Walls, Hoy, Orkney, 1931, DRUCE.

419/248. H. ANGUSTUM Lindb., f. TYPICUM Zahn. Southport, S. Lancs, 1927, DRUCE.

419/250. H. DUMOSUM Jord., var. GENUINUM Zahn, f. NORMALE a VERUM Zahn in A. & G. Synopsis. Glendalough, Co. Wicklow, 1928, DRUCE.

419/252. H. OBLIQUUM Jord., var. GENUINUM Zahn, lusus DESCRESCENS Zahn. Waters Meet, Lynton, N. Devon, 1929, DRUCE.

Var. INDOLATUM (Jord.) Sudre p.p. Boughrood, Radnor, 1931, DRUCE.

(See also Col. H. H. Johnston's paper on " Additions to the Flora of Orkney " (in this Report) for descriptions of four new British species of *Hieracia*.)

422/2. LEONTODON AUTUMNALIS L. Luxuriant specimens approaching var. *sordidus* Bab. Dundee, Angus, CORSTORPHINE.

Var. PRATENSIS Koch. Stenness, Pomona, Orkney, 1931, DRUCE.

(The Taraxaca have all been seen and determined by Dr H. Dahlstedt.)

423/1. Taraxacum brachyglossum Dahlst. St Fagans, Glamorgan, Miss Vachell; Grosmont, N.E. Yorks, Flintoff; Durdham Downs, W. Gloster, Druce.

423/4. T. fulvum Raunk. Hitchin, Herts, Mrs Wedgwood, also a modification of the type from the same locality.

423/6. T. lacistophyllum Dahlst. Brandon, W. Norfolk; Icklingham, W. Suffolk, H. Phillips; Clifton and Durdham Downs, W. Gloster, 1930; Holyhead, Anglesey, 1930, Druce. Forma fol. latioribus brevius lobatis, Waldon Hill, S. Devon, Druce. Modif. Hitchin, Herts, Mrs Wedgwood; Icklingham, W. Suffolk, H. Phillips; S. Walls, Hoy, Orkney, Druce.

423/7. T. laetum Dahlst. Allied to or a form of, Ivinghoe Beacon, Bucks, 1904, Druce.

423/10. T. proximum Dahlst. Probably this, Brean Downs, N. Somerset, Mrs Sandwith.

423/10(2). T. rubicundum Dahlst. Cheddar, N. Somerset, Mrs Wedgwood.

423/12. T. dissimile Dahlst., var. Faccombe, Berks. 1931, Druce and Hon. Mrs G. Baring. A plant related to this [Ref. No. AA.233] from The Crescent, Oxford, 1923; modif., Swanage, Dorset, 1917, Druce.

423/23. T. faeroense Dahlst. Widdy Bank and Winch Bridge, Durham, Miss Vachell; Dalnaspidal, E. Perth, 1931, Druce and Corstorphine; modif., Waldon Hill, S. Devon, Druce; forma, Teesdale, Durham, 1911, Druce.

423/26. T. maculigerum Lindb. f. A very interesting form, near this, from St Fagans, Glamorgan, Miss Vachell.

423/27. T. naevosiforme Dahlst., modif. Betty Hill, W. Sutherland, 1931, Foggitt; Widdy Bank and Winch Bridge, Durham, Miss Vachell.

423/28. T. naevosum Dahlst. St Martins, Jersey, 1851, Piquet.

423/53. T. duplidens Lindb. f. Stevenage, Herts, H. Phillips.

423/61. T. hamatum Dahlst. A form of this [Ref. No. Y.239], Ufton Wood, Warwick; Walmer, E. Kent, 1879; Helmdon and Byfield, Northants, Druce.

423/66. T. laciniosum Dahlst. Near this, [Ref. No. D.34], Studley, Oxon, Druce.

423/67. T. LAETICOLOR Dahlst., forma. River bed near Brecon, Miss VACHELL.

423/72. T. LONGISQUAMEUM Lindb. f., forma. Waterworks, Oxford; Pitstone, Bucks; Adderbury, Oxon, DRUCE; Wymondley, Herts, H. PHILLIPS. Forma SAGITTATUM Dahlst. Inchnadamph, W. Sutherland, DRUCE.

423/84(2). T. SUBLAETICOLOR Dahlst. A form related to this from Welwyn, Herts, 1824, W. J. BLAKE.

425/1. LACTUCA VIROSA L. Avonmouth, W. Gloster, J. EVANS.

*425/2. LACTUCA SERRIOLA L. Potter's Marston, Leicester, F. A. SOWTER.

431/2. LOBELIA URENS L. Plentiful in a wood near Flimwell Vicarage, E. Sussex, 1922. Mrs E. E. JOHNSON and Mrs TOMS.

435/3. CAMPANULA TRACHELIUM L., var. URTICIFOLIA Lej. & Court. Bix, Oxon, DRUCE.

†435/4. C. RAPUNCULOIDES L. Worcester Lodge, Forest of Dean, W. Gloster; railway-bank, Yarnton, Oxon, P. G. BEAK.

435/6. C. PERSICIFOLIA L. Probably native on gorsey ground near Budleigh Salterton, S. Devon, discovered there by Major ORME, who kindly showed it me, DRUCE.

435/8. C. PATULA L. Near Yattendon, Berks, August 1931, F. N. A. GARRY and Rev. E. C. CRUTWELL. A new station for this plant in the county. Pin's Farm, Wellow, S. Hants, coll. G. W. PIERCE; comm. HALL.

441/1. ARCTOSTAPHYLOS UVA-URSI (L.) Spreng., var. ANGUSTIFOLIA Druce. Rackwick, Hoy, Orkney, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL.

441/2. A. ALPINA Spreng. Plentiful on the hills of Hoy, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL.

†443/1. GAULTHERIA SHALLON Pursh. New Forest, S. Hants, G. HAYNES.

445/1. CALLUNA VULGARIS (L.) Hull, var. ERIKAE Asch. Aith Hope, S. Walls, Hoy, Orkney, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL. This pretty variety grew here as a white-flowered plant, like the one cultivated in the Edinburgh Botanic Gardens. The type, purple-flowered plant grew at Rackwick, Hoy, and in Glen Torridon, W. Ross, and also the var. PUBESCENS.

446/1. ERICA CINEREA L., var. SPLENDENS (Vigurs) Dr. Near Binley, N. Hants, PHILLIPS.

†446/7. E. VAGANS L. A few plants, appearing quite native, but of course introduced, occur in the heathy ground near Bagshot, Berks, where it was discovered by Major ORME, who directed me to the spot, DRUCE.

447/1. LOISELEURIA PROCUMBENS (L.) Desv. On the Knap of Trowie Glen, Hoy, Orkney, Hon. Mrs G. BARING and Miss MEYNELL, who were directed to the locality by JAMES SINCLAIR.

453/1. PYROLA ROTUNDIFOLIA L., var. MARITIMA (Kenyon), teste DRABBLE. Dyserth, Flint, Miss NEILD. Previously found there by Dr HAYNES-THOMAS.

453/3. P. MINOR L. Woodchester, W. Gloster, DRUCE; *Prestatyn, Flint, Miss B. ALLEN.

454/1. MONESES UNIFLORA (L.) A. Gray. Golspie, E. Sutherland, in beautiful flower, DRUCE, Hon. Mrs G. BARING and CORSTORPHINE.

456/1. HYPOPITYS HYPOPITYS (L.) Dr. Brock Hillwood, Colwall, Hereford, Mrs WOOLDRIDGE, ex F. M. DAY.

458/4. STATICE MARITIMA Mill. Berryhead, S. Devon, DRUCE.

460/2. PRIMULA VULGARIS Huds. An aberrant form in which one long-stalked Primrose is present with another one when there are three. Horton, Gloster, Mrs HARFORD. Monstr. FOLIACEA, near Hayle, W. Cornwall, R. KEMPTHORNE, sepals replaced by green leaves one inch long. On the Moorland, Penzance, W. Cornwall, E. REES. It has been breeding true for three years.

460/5. P. SCOTICA Hook. Aith Hope, S. Walls, Hoy, Orkney, in beautiful flower. DRUCE, Hon. Mrs G. BARING, Miss MEYNELL and Col. JOHNSTON, who directed us to the locality.

†463/1. LYSIMACHIA THYRSIFLORA L. Stoke Court, Farnham Royal, Bucks, E. B. BASDEN.

†463/3. L. PUNCTATA L. Hoy Village, Hoy, Orkney, 1931, DRUCE.

466/1. GLAUX MARITIMA L. A diffuse form occurred at Aith Hope, S. Walls, Hoy, Orkney, DRUCE.

†470/1. SYRINGA VULGARIS L. Several large bushes at Melsetter, Hoy, Orkney, DRUCE.

471/1. FRAXINUS EXCELSIOR L., var. DIVERSIFOLIA Ait. A single tree near West Meon, S. Hants, coll. F. ESCOMBE; comm. HALL.

472/1. LIGUSTRUM VULGARE L. This was an especially prolific flowerer in 1931, and on Braunton Burrows the flowers were much larger than usual, producing a very showy effect.

Var. FLORE LUTEO, teste Kew. Duncombe Wood, East Meon, Hants, coll. F. ESCOMBE; comm. HALL.

†474/2. BUDDLEIA DAVIDI Franch. Ilfracombe, N. Devon, DRUCE.

478/1. CENTAURIUM CENTAURIUM (L.) Druce. As a tall, lax-flowered plant at Marazion, W. Cornwall, DRUCE; a tall plant with small flowers (an approach to *tenuiflorum*), Fishburn, I. of Wight, 1931, Lady DAVY.
Var. CAPITATUM (Koch) Dr. Hartland Point, N. Devon, Lady DAVY; fixed dunes, Huishnish, N. Harris, 1928, DRUCE.
Var. SUBLITORALE (W. & S.) Dr. Braunton Burrows, N. Devon, DRUCE.

478/4. C. PULCHELLUM (Sw.) Dr., var SIMPLICISSIMUM (Schmidt). Hayle, W. Cornwall, DRUCE; a capitate form, Braunton, N. Devon, Dr ELLISTON-WRIGHT.

480/4. GENTIANA AMARELLA L. Large specimens, Freshwater, I of Wight, Lady DAVY; Coniston, N.W. Yorks, DRUCE, variable in size and colour; Bishopstone, E. Sussex; Cotswolds above Cheltenham, E. Gloster, Miss PICKARD.

480/9. G. CAMPESTRIS L. Strathorrin, E. Ross, DRUCE and CORSTORPHINE; Langdon Beck, Durham, DRUCE.
Var. BALTICA (Murb.). Alfriston near Lewes, Sussex, Miss PICKARD, teste DRABBLE.

†493/2. LAPPULA LAPPULA (L.). Avonmouth, W. Gloster, EVANS.

†497/4. SYMPHYTUM PEREGRINUM Ledeb. Ilfracombe, N. Devon, DRUCE.

†500/2. ANCHUSA OFFICINALIS L. In greater quantity than formerly at Hayle, W. Cornwall, with other species and hybrids, DRUCE.

†500/4. A. OCHROLEUCA M. Bieb. Dover, E. Kent, J. JACOB.

503/1. PULMONARIA OFFICINALIS L. Micheldever, N. Hants, coll. J. N. MILLS; comm. HALL.

505/1. PNEUMARIA MARITIMA (L.) Hill. In considerable quantity and very beautiful at Kirk Bay, S. Ronaldshay, Orkney, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL. We were directed to the locality by JAMES SINCLAIR.

506/1. MYOSOTIS PALUSTRIS Hill, var. HIRSUTA Braun. Reay, Caithness, DRUCE.
Var. STRIGULOSA (Reichb.) M. & K. Cothill, Berks, and as f. NEMOROSA Bess. Spiggie, Zetland; Coleman's Moor, Loddon Bridge, Berks; Scarmclett, Caithness, DRUCE.

Var. NEMORALIS Kittel. Arisaig, Easterness, 1903; Bullingdon, Oxon, DRUCE; Dunham, Cheshire, C. BAILEY; Wotton, Surrey, C. E. BRITTON. f. PARVIFLORA. Earn Shingle, M. Perth, DRUCE.

Var. REICHENBACHIANA Wade. Bladon, Oxon (previously under COMMUTATA); near Gairloch, W. Ross; Croxdale, Durham; Wytham, Berks, DRUCE; near Blundell, Lancs, Rev. W. W. MASON; Otterston, Fife, J. T. B. SYME.

Var. SEROTINA Wade. Bladon, Oxon, DRUCE. f. LANCIFOLIA Wade, Wytham, Berks, DRUCE.

506/3. MYOSOTIS REPENS (Don) Reichb. Rysa, Hoy, Orkney, 1931; Llyn Coron, Anglesey, 1930, DRUCE.

506/4. M. CAESPITOSA Schultz. Melmerby, Cumberland; Maybole, Ayr; Mortimer, Berks, 1930, DRUCE.

506/7. M. SYLVATICA Hoff. Malham, Mid-West Yorks, 1931, A. TURNER.

506/8. M. ARVENSIS (L.) Hill. Slapton Lea, S. Devon, 1931, DRUCE.

Var. DUMETORUM Crép. Hayle, W. Cornwall, 1931, DRUCE.

506/10. M. VERSICOLOR Sm., var. BALBISIANA (Jord.). Bucklebury, Berks, 1931, DRUCE and Hon. Mrs G. BARING.

Var. LLOYDII Corb. Bucklebury, Berks, 1931, DRUCE and Hon. Mrs G. BARING.

Var. LUTEA DC. Bucklebury, Berks, DRUCE and Hon. Mrs G. BARING.

Var. BREVICALYX Druce. Abbey Wood, Kent; Wicklow Sandhills, 1909, DRUCE.

517/1. SOLANUM DULCAMARA L. Slapton Lea, S. Devon, DRUCE.

*527/7. VERBASCUM LYCHNITIS L. Hayle, W. Cornwall, DRUCE.

532/1. LINARIA LINARIA Mill. A very narrow-leaved (var. LINEARIS) strict variety, Westcliff-on-Sea, S. Essex, Rev. W. W. MASON.

× REPENS = SEPIUM (Allm.). Cymnwych, Cardigan, B. LLOYD.

532/3. L. REPENS (L.) Mill. A nearly pure white form, Newquay, W. Cornwall, DRUCE; Presthope, Salop, C. REA.

*535/1. SCROPHULARIA VERNALIS L. East Tytherley, S. Hants, coll. G. W. PIERCE; comm. HALL. Bucklebury Common, Berks, Miss NEILD; near Broughton, S. Hants, Miss SIDEBOTTOM, ex Miss SALMON.

535/5. S. SCORODONIA L. A small-fruited form, Marazion, W. Cornwall, DRUCE.

542/1. ERINUS ALPINUS L. Planted on Windsor Castle, Berks, DRUCE.

543/5. VERONICA MONTANA L. Horsted Keynes, Sussex, DALGLEISH.

543/7. V. BECCABUNGA L., f. SUBMERSA. All the leaves were submerged and translucent. Brompton, Scarborough, N.E. Yorks, FLINTOFF.

543/8. V. SCUTELLATA L. Glen Cahir, Co. Clare; Monlough, Co. Down, DRUCE.

543/8. V. ANAGALLIS-AQUATICA L., var. AMBIGUA Krösche. Budleigh Salterton, S. Devon, DRUCE.
Var. GLANDULOSA Druce. Potterne, N. Wilts, DRUCE.

543/9. V. AQUATICA Bernh., var. ANAGALLIFORMIS (Bor.). Wytham, Berks, DRUCE.

543/18. V. TOURNEFORTII Gmel., var. ASCHERSONIANA Lehm. Gangsdown, Oxon, DRUCE.

546/4. BARTSIA VISCOSA L. *In a rough grassy plot in a garden at Oker, near Matlock, Derby, Sir M. ABBOT ANDERSON; *Goodwick, Pembroke, B. LLOYD; Braunton, N. Devon, DRUCE.

(Mr W. H. PEARSALL has kindly determined the EUPHRASIAE.)

545/2. EUPHRASIA BOREALIS Wettst. Hayle, W. Cornwall; Rysa and Rackwick, Hoy, Orkney, DRUCE.

545/3. E. BREVIPILA Burnat & Gremli. Melsetter, Hoy, Orkney, DRUCE.

545/5. E. NEMOROSA Pers. Assenton, Oxon, 1931, DRUCE. Mr Pearsall refers this slender, small-flowered plant, which is often called *Kerneri*, to *nemorosa*. Rysa, Hoy, Orkney, DRUCE, as a large and strict form quite off type.

545/15. E. MICRANTHA Reichb. Rysa, Hoy, Orkney, DRUCE.

545/19. E. ROSTKOVIANA Hayne. Walmer, E. Kent, CASTALIA, COUNTESS OF GRANVILLE.

545/22. E. SALISBURGENSIS Funck. Both Mr W. H. Pearsall and Dr E. Drabble refer plants which I gathered on calcareous sea-sand, Slapton, S. Devon, in August 1931, to this species. New to the South of England and hitherto only known in England from two Yorkshire records of Dr Arnold Lees, DRUCE.

548/5. RHINANTHUS STENOPHYLLUS Schur. Stenness, Orkney, DRUCE.

550/2. OROBANCHE VULGARIS Poir. Near Farningham, Kent, growing on *Galium Mollugo* L., H. WALKER.

550/9. O. AMETHYSTEA Thuill. Berry Head, S. Devon, growing on *Daucus*, DRUCE.

552/5. UTRICULARIA MINOR L. Burnham, Bucks, E. B. BASDEN. Mr Pearsall detected fragments around *Potamogeton pectinatus*. *U. minor* is very rare in Bucks.

*553/4. PINGUICULA LUSITANICA L. Mallory, Pembroke, C. OLDHAM and B. LLOYD. New to Wales.

(The MENTHAE have been kindly determined by Mr J. FRASER.)

558/1. MENTHA ROTUNDIFOLIA (L.) Huds. A pretty form from Pentewan, E. Cornwall, DRUCE.

558/2. ×M. NILIACA Jacq., var. ALOPECUROIDES (Hull) Briq. Pentewan, E. Cornwall, DRUCE.

558/3. ×M. NILIACA Jacq., var. NEMOROSA (Willd.). Melsetter, Hoy, Orkney, 1931, DRUCE.

558/4. M. SPICATA Huds. Rysa Lodge, Hoy, Orkney; waste ground, Bideford, N. Devon; Slapton. S. Devon, DRUCE.

558/6. ×M. PIPERITA L. By the Humber, Tobyon, N. Lincs, Miss MARSDEN.

558/7. M. AQUATICA L., var. MAJOR Sole. Strathorrin, E. Ross, 1931, DRUCE and CORSTORPHINE.

558/9. ×M. VERTICILLATA (L.), var. OVALIFOLIA (Opiz) Briq. Possibly this from Braunton, N. Devon, DRUCE.

558/10. ×M. GENTILIS (L.), var. GRATA (Host) Briq. Hayle, W. Cornwall, DRUCE.

558/12. ×M. RUBRA Huds. Stoke Court, Farnham, Bucks, E. B. BASDEN.

558/13. M. ARVENSIS L. Also as forma ANGUSTIFOLIA Fraser. Stoke Court, Farnham, Bucks, E. B. BASDEN.

Forma HIRTIPES Fraser. New Forest, S. Hants; Caistor-on-Sea, E. Norfolk, H. PHILLIPS.

(The THYMES have been kindly determined by Dr K. RONNIGER.)

561/1. THYMUS PULEGIOIDES L., var. CHAMAEDRYS (Fr.) Ronn., f. DENTICULATUS W. & Grab. Stow Wood, Oxon, DRUCE.

Var. GLABER (Mill.) Ronn. Box Hill, Surrey, Mrs WEDGWOOD.

561/8. T. DRUCEI Ronn. Dalnaspidal, E. Perth, 1931, DRUCE and CORSTORPHINE.

561/10. T. NEGLECTUS Ronn. Crinnis, E. Cornwall, L. T. MEDLIN, ex THURSTON; Marlborough, N. Wilts, Rev. G. PEIRSON; Ilsley, Berks; *Minchinhampton and Selsley Commons, W. Gloster, DRUCE.

561/11. T. BRITANNICUS Ronn. Barnbarroch, Wigton, 1909, E. K. HIGGINS; Crinnis, E. Cornwall, L. T. MEDLIN, ex THURSTON; Harlech golf links, Merioneth, 1915, W. C. BARTON, as *Serpyllum*; golf course, Penard Castle, Glamorgan, T. J. FOGGITT; *Highton, S. Lancs, 1911, J. A. WHELDON, as *Serpyllum*; Ilsley, Berks; near Mells, N. Somerset; Drummore, Wigtown; Rock, E. Cornwall; The Lizard, Logan, Hayle, W. Cornwall; Slapton, S. Devon, DRUCE.

× PULEGIOIDES, var. CHAMAEDRYS = T. LANSDOWNEIAE Druce et Ronniger. Minchinhampton, W. Gloster; Berry Head, S. Devon, DRUCE.

566/1. SALVIA PRATENSIS L. Near Goring, Oxon, E. MILNE-REDHEAD.

566/2. S. VERBENACA L., teste Dr Schinz. Hayle, W. Cornwall, DRUCE; Lancing College, W. Sussex, DALGLEISH.

†566/17. S. VERTICILLATA L. Gloster Docks, E. Gloster, Miss TODD.

572/2. SCUTELLARIA MINOR Huds. Near Calgarry, Isle of Mull, J. S. L. GILMOUR.

*574/1. MELITTIS MELISSOPHYLLUM L. Eglwyswrw, Pembroke, B. REYNOLDS.

577/2. STACHYS GERMANICA L. Appeared in one of its old stations in Oxfordshire in some quantity and luxuriance after an absence of over twenty years, DRUCE.

577/3. S. SYLVATICA L., var. UMBROSA Druce. Burton Bradstock, Dorset, G. R. A. BRAITHWAITE.

577/2. × S. AMBIGUA Sm. Hayle, W. Cornwall, DRUCE.

†577/7. S. ANNUA L. Dalby Marwood, N.E. Yorks, FLINTOFF.

577/13. S. OFFICINALIS (L.) Trevis, var. ALBA. Monmouth, C. T. AMHERST.

578/2. GALEOPSIS TETRAHIT L., var. NIGRESCENS Bréb. Glynde, E. Sussex, Miss PICKARD.

578/4. G. INTERMEDIA Vill. Avonmouth Docks, W. Gloster, EVANS.

581/1. LAMIUM PURPUREUM L., var. ALBUM (?). Glynde, E. Sussex, 1931, Miss PICKARD.

586/1. TEUCRIUM SCORODONIA L. With herbaceous flowers and variegated foliage, Rock, E. Cornwall, DRUCE.

586/3. T. BOTRYS L. Established between Canterbury and Ashford, E. Kent, H. PHILLIPS.

*586/4. T. CHAMAEDRYS L. Lyminge, E. Kent, Mr WALTON, ex Mrs GIBBINGS.

†588/1. PLANTAGO INDICA L. Avonmouth, W. Gloster, EVANS.

(The following PLANTAGO have been determined by Dr PILGER, of Berlin, from my Herbarium.)

588/3. PLANTAGO CORONOPUS L., var. LACINIATA (Willk.) Pilger = P. CORONOPUS L., var. CERATOPHYLLA Rapin. E. G. Baker, 1900. Abbott's Cliffs, Dover, E. Kent, 1902, DRUCE, a tall plant nearly a foot high, with upright hairy leaves; Pagham, Chichester, W. Sussex, 1916; Kingsdown, Kent, Rev. H. E. Fox.

Var. COLUMNAE (Gouan) Willd. The Lizard, W. Cornwall, 1904; Pwllheli, Abersock, Carnarvon, 1900, DRUCE; Freshwater, Isle of Wight, 1904, WOLLEY-DOD; Giant's Causeway, Bournemouth, S. Hants, Miss C. E. PALMER.

Var. STRICTA Pilger. Holy Island, Northumberland, 1901; Spiggie, Zetland, 1920; Great Orme's Head, Carnarvon; Holburn Head, Caithness; Clarsdon, Caithness, 1902 (Baker's var. *maritima*); Giant's Causeway, Antrim, 1912, DRUCE.

Var. VULGARIS, f. PYGMAEA Lange. Berry Head, S. Devon, 1900; Braunton Burrows, N. Devon, DRUCE; Whitchurch Head, Salop, 1901, WOLLEY-DOD; Hightown, S. Lancs. WHELDON; Scarth Hole, Dalton, N. Lancs, LUMB.

Var. CERATOPHYLLON (H. & L.) Rapin. Ballyvaghan, Co. Clare, 1916, DRUCE and O'KELLY; St Helier's, Jersey, 1906 (*multifida* Wirtg. of Baker); St Ouen's, Jersey; Newquay, W. Cornwall, DRUCE.

588/4. P. SABRINAE (Bak. & Card.) Druce = P. CORONOPUS L., var. SABRINAE Baker & Cardew. Steep Holme, N. Somerset. Most of our British Botanists who have seen it growing on the Steep Holme believe in its claims to specific rank. I cultivated it for several years and it retained its characters. Dr Pilger identifies it with *P. Coronopus* L., var. *columnae* (Gouan) Willd.

Sub-var. LATILOBA Pilger. Steep Holme, locus classicus, G. C. DRUCE; Bournemouth, S. Hants, Miss C. E. PALMER; Millook, Cornwall, 1914, DRUCE. Both these were named *crithmifolia* Willk. by Baker.

588/8. P. LANCEOLATA L., var. ELLIPTICA Druce. Farnham Royal, Bucks, E. B. BASDEN !; Hook, N. Hants; Potterne, N. Wilts; Helston, W. Cornwall, DRUCE.

588/9. P. MEDIA L., var. URVILLEANA Rapin. (LANCEOLATIFORMIS Druce). Frilford, Berks, 1913; near Andoversford, E. Gloster, 1929; Hardwick, Oxon, 1914, DRUCE.

588/10. P. MAJOR L., var. VULGARIS Pilger, f. INTERMEDIA (Gilib.) Pilger. Loch Leven side, Kinross; Pyrford golf links, Surrey, 1912, DRUCE.

600/2. CHENOPODIUM CRASSIFOLIUM Hornem. in Hort. Hafn., 254, 1813, var. *Degenianum* Aellen Ung. Bot. Blat., 62, 1926, as *Botryodes* Sm.

600/4. C. HYBRIDUM L. Thetford, W. Norfolk, Miss TODD; Hertford, H. PHILLIPS.

600/6. C. MURALE L. Yarmouth, E. Norfolk, H. PHILLIPS.

600/7. C. OPULIFOLIUM Schrad. Welwyn, Herts, H. PHILLIPS.

600/8. C. ALBUM L., var. VIRIDE (L.). Plymouth, S. Devon, 1850, Mrs TOZER.

600/13. C. GLAUCUM L. Welwyn, Herts, H. PHILLIPS.

*600/15. C. POLYSPERMUM L. In great plenty near Settle, Yorks, new to v.-c. 64, H. H. STURDY and J. N. FRANKLAND.

606/3. ATRIPLEX PATULA L., var. BRACTEATA Westerl. Darlington, Durham, J. E. NOWERS; Bideford, N. Devon, DRUCE; Yarmouth, E. Norfolk, H. PHILLIPS.

606/7. A. GLABRIUSCULA Edmondst. Keiss, Caithness, Mrs WEDGWOOD, as *pseudo-calotheca*, but Dr Schinz thinks it has no claim to a varietal name.

†606/10. A. HORTENSIS L. Waste ground, Reading, Berks, DRUCE.

606/17. A. PORTULACOIDES L. Plymouth, S. Devon, 1850, Mrs TOZER, as *Chenopodium Vulvaria* L.

611/4. SALICORNIA EUROPAEA L. Glynde, E. Sussex, Miss PICKARD.

611/5. S. RAMOSISSIMA Woods. Glynde, E. Sussex, Miss PICKARD.

†615/31. POLYGONUM POLYSTACHYUM Wallich. Stoke Court, Bucks, E. B. BASDEN.

†615/32. P. CUSPIDATUM S. & Z. Dover, E. Kent, J. JACOB.

†615/33. P. SACHALINENSE Schmidt. Barnstaple, N. Devon, DRUCE.

618/3. RUMEX CRISPUS L., var. TRIANGULATUS Syme. Gribon, Isle of Mull, J. S. L. GILMOUR.

618/3. R. ACUTUS L. R. CRISPUS × OBTUSIFOLIUS. Ilfracombe, N. Devon, DRUCE.

623/2. DAPHNE MEZEREUM L. Wood near Glynde, E. Sussex, in flower on January 29th, DALGLEISH.

628/5. EUPHORBIA PLATYPHYLLOS L. Cockayne Hatley, Beds, M. BROWN and LITTLE. W. D. Miller found this, one of our rarest Oxfordshire plants, in a new locality at Westcott Barton where, by his directions, I and Mr Chapple were able to see two or three plants, DRUCE.

628/8. E. AMYGDALOIDES L. In great abundance on grassy borders and on newly turned soil at Dashwood Hill, Bucks, DRUCE.

628/9. E. VIRGATA W. & K. Gogmagogs, Cambridge, Miss TODD; Hassocks sand-pit, Glynde, E. Sussex, Miss PICKARD; *Great Bedwyn, N. Wilts, DRUCE.

†628/11. E. CYPARISSIAS L. Sonning Common, Oxon, POWELL; St Anne's-on-Sea, S. Lancs, H. BRUNKER; Farr and Torrisdale, W. Sutherland, in plenty, D. GORDON, ex GILMOUR, named by WILMOTT: near East Meon, Hants, coll. F. ESCOMBE; comm. HALL.

632/2. MERCURIALIS ANNUA L., var. AMBIGUA (L.). Sea-shore, Herm, Channel Isles, 1931, J. FRANKLIN.

633/1. ULMUS MONTANA Stokes. Melsetter, Hoy, Orkney; Teesdale, Durham, DRUCE. Dr Lindquist is about to divide the Wych Elm.

633/6. U. MINOR Miller, 1768. U. STRICTA Lindley. Launceston, E. Cornwall, 1931, DRUCE. It is quite extraordinary how some botanists cling to an untenable name. Miller's *minor* is quite unmistakably the Cornish Elm; the description of upright branches at once cuts out Plot's Elm.

637/2. URTICA URENS L., var. PARVIFOLIA Druce. Town of Dorset, 1850, Mrs TOZER; Hitchin, Herts, H. PHILLIPS; Benson, Oxon, DRUCE.

†639/1. HELXINE SOLEIROLII Req. Boscombe, S. Hants, W. BOUCHER. See an account in the *Gardeners' Chron.*, 226, 1930.

646/1. QUERCUS ROBUR L. "The leaves turn yellow at Malvern in the autumn, those of *Q. sessiliflora* copper-coloured, and this difference is especially noticeable if the two species are growing together, so that it is possible to tell them apart by the colour as much as fifty yards away. I wonder if this difference has been noticed elsewhere."—F. M. DAY.

650/3. SALIX ALBA L., var. STENOPHYLLA Fraser. Shrivenham, Berks, DRUCE.

650/4. S. TRIANDRA L., type. Port Meadow, Oxford, Lady DOUIE.

650/8. S. CAPREA × VIMINALIS = S. MOLLISSIMA Smith. Melsetter, Hoy, Orkney, 1931, DRUCE.

650/10. S. CINEREA L. Rysa Lodge. Hoy, Orkney, 1931; Hampstead Marshall, Berks, DRUCE.

650/11. S. REPENS L., var. INCUBACEA (L.), sub-var. SERICEA Fraser. Melsetter, Hoy, Orkney, 1931, DRUCE.

650/14. S. ARBUSCULA L. = S. VACCINIFOLIA. Ben Laoigh, M. Perth, 1500 ft., A. WILSON and J. A. WHELDON.

650/18. S. HERBACEA L. Knap of Trowieglen, Hoy, Orkney, 1931. DRUCE, Hon. Mrs G. BARING and Miss MEYNELL.

*651/3. POPULUS NIGRA L., var. BETULIFOLIA (Pursh) Torrey. Strathorrin, E. Ross, 1931, DRUCE and CORSTORPHINE.

656. ELODEA. Dr F. Marie Victorin argues in a paper that the name cannot be *Elodea* but *Anacharis* (founded by Planchon *Am. Sc. Nat.*, iii., 75. 1869), which Babington brought into use for it.

659/1. MALAXIS PALUDOSA (L.) Sw. Frequent in the marsh near Kinlochewe, W. Ross, where Prof. Fernald saw *Eriophorum alpinum*; bank of Lyrawa Burn, Hoy, Orkney, August 12, 1931, Col. H. H. JOHNSTON.

663/2. LISTERA CORDATA (L.) Br. Mouth of Pegal Burn, Hoy, Orkney, 1931, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL, shown to us by Col. H. H. JOHNSTON.

664/2. SPIRANTHES SPIRALIS (L.) C. Koch. Huntercombe, Oxon, Lady SEVERN; Castle Martin, Pembroke, C. OLDHAM and B. LLOYD.

668/1. HELLEBORINE PALUSTRIS (Mill.) Schrank. There was a most magnificent growth on Braunton Burrows, N. Devon, last summer, many acres in extent and one mass of flower, DRUCE.

668/2. H. HELLEBORINE (L.) Druce. *Piston Park, Pembroke, REYNOLDS and B. LLOYD.
Var. ANGUSTIFOLIA (Dr.). Mongwell, Oxon, Dr HENDLEY.
Var. ATROVIRIDIS (W. R. L.). Foxcote, E. Gloster, Miss ABELL.

668/3. H. LEPTOCHILA (Godf.). Berwick Trench, Oxon, Dr HENDLEY.

668/4. H. PURPURATA (Sm.) Dr. Cornwood, S. Devon, 1854, Mrs TOZER.

*668/5. H. ATROPURPUREA (Rafn.) Dr. On limestone near Cardiff, Glamorgan, Miss LEAKE.

669/4. ORCHIS USTULATA L. Alluvial meadows near Bampton, Oxon, somewhat lax-flowered spikes, P. G. BEAK.

669/5. O. MORIO L. Atwick, E. Yorks, R. BULLEY; Great Bedwyn, N. Wilts, DRUCE.

669/7. O. INCARNATA L., var. PULCHRIOR Druce. Horton-in-Craven, N.W. Yorks, J. N. FRANKLAND; Sapcote, Leicester, BEMROSE.

×PRAETERMISSA. A rare hybrid, Hartland Point, N. Devon, Lady DAVY. Labellum pale, smaller than in *praetermissa*, leaves narrow.

669/8. O. PRAETERMISSA Druce. Aldborough, Hornsea Mere, E. Yorks, R. BULLEY; Hartland, N. Devon, with its hybrid, Lady DAVY; Birlby Common, Somerset, HALL; Tresillian, Cornwall, NICHOLSON; small-flowered bracteate form, Welford, Berks, with the type, DRUCE.

*669/9. O. PURPURELLA Stephenson. In great abundance in a mountain bog near Austwick, Yorks, where I first discovered it in July 1931. I could make it out to be nothing but this, so sent specimens to Kew who confirmed it as this plant, and agreeing with form B from Ambleside. First record for v.-c. 64. Later I discovered it in another bog in the same district, J. N. FRANKLAND.

669/10. O. MACULATA L., vera. Near the Old Man of Hoy, Orkney, rather frequent and the only form noticed in the Island, August 1931. DRUCE. *Beauvale, Notts, unspotted leaves, R. BULLEY; monstrosity, narrow upper petals, slender spur, Cardiff, Glamorgan, Miss VACHELL.

Var. MACROGLOSSUM Dr. Cardiff, Glamorgan, Miss VACHELL; Beauvale, Notts, R. BULLEY.

×PRAETERMISSA. N.W. Yorks, J. N. FRANKLAND. Italy, Belgium, France, Le Haiac.

669/11. O. FUCHSII Druce. Type at Compton Wood, Berks, up to three feet high, lilac and dark-purple lip markings, DRUCE; Thrumpton Hills, Notts, R. BULLEY; Ashdown Forest, Sussex, with *eu-maculata*, DRUCE.

Var. OVATA Druce. Leaves broadly oval, 3.50×5 cm., slightly spotted, Horton-in-Craven, N.W. Yorks, J. N. FRANKLAND.

×PRAETERMISSA = O. MORTONII Druce. Marston Measey, N. Wilts, leaves narrow, scarcely spotted, flowers with strong purple markings, DRUCE.

×INCARNATA L. = O. CURTISII Druce. Southwick, S. Hants. Some specimens had faint ring spots, others had unspotted leaves. The labellum varied from a complete three-lobed labellum to a single strap-shaped petal, with intermediate forms, HALL.

*669/12. O. O'KELLYI Druce. Hucknall, Notts, R. BULLEY; marshy shore-pastures, Killean, Argyll, Mrs MACALISTER HALL.

669/14. O. MASCULA L. With fine large, dark-purple heads of flowers, Stoke Goldington, Bucks, May 1931, DRUCE.

669/18. O. HIRCINA Crantz. On a chalk bank bordering a wood, Loudwater, Bucks, F. ALDRED. The second Buckinghamshire locality. Branshley near Romsey, S. Hants, school-child, ex Rt. Hon. H. T. BAKER; near Stevenage, Herts, R. D. WORSTED, ex T. A. DYMES; six miles from Guildford, Surrey, North Downs, C. HOARE, ex F. CLARKE; a solitary specimen on the Berkshire Downs, Miss H. CROSS; Rutland, WAGSTAFFE, ex SOWTER.

672/3. OPHRYS APIFERA Huds. Pool Bottom, Oxon, one plant had labellum absent, DRUCE.

674/4. HABENARIA (COELOGLOSSUM) VIRIDIS (L.) Br. Near Sturminster Newton, Dorset, Miss YEATMAN and Miss RICHARDS.

Var. VAILLANTII (Ten.) Fern. Braunton Burrows, N. Devon, DRUCE; near Stoke-on-Trent, Staffs, E. DEACON; Bishop's Camden, near Sherborne, Dorset, Miss YEATMAN, ex Miss L. RICHARDS.

674. HABENARIA hybrid. Mr Jacob, of Dover, sent me the drawing of an *Orchis* (about which Mr Walker wrote to me), which was exhibited in the Maidstone Museum and was thought by the finder to be a hybrid of *Habenaria virescens* with *Orchis praetermissa*. The specimen unfortunately was not preserved. It is just possible it may have been a *Serapias*.

676/2. IRIS FOETIDISSIMA L. Castle Martin, Pembroke, C. OLDHAM and B. LLOYD.

*680/1. SISYRINCHIUM ANGUSTIFOLIUM Mill. Waste ground by road. two miles E. of Fordwick by Canterbury, E. Kent, ELEANOR DAY; School road, Wellow, S. Hants, coll. G. W. PIERCE; comm. HALL.

†683/1. TRITONIA CROCOSMIFLORA Nich. Woody Bay, Bideford, N. Devon, DRUCE.

684/3. NARCISSUS BIFLORUS Curtis. Copeland Isle, Donaghadee. F. STOREY. See *Rep. B.E.C.*, 372, 1930.

*686/1. LEUCOJUM VERNUM L. Several clumps found by H. H. Sturdy in a wood near Settle in April 1931, growing amongst Wild Hyacinth, Dog's Mercury and other native plants. Although certainly introduced, these plants must have been here a considerable time for the wood has not been altered in any way for at least fifty years. Mr Sturdy noticed these plants at a distance many years ago and took them for Snowdrops so did not examine them. New record for v.-c. 6.

[illegible]

686/2. L. AESTIVUM L. Menabilly Wood, E. Cornwall, THURSTON.

702/4. ALLIUM VINEALE L., var. COMPACTUM (Thuill.). Much Hadham, Herts, Lady ALETHEA BUXTON.

*702/7. A. TRIQUETRUM L. Milford-on-Sea, S. Hants, Mrs ELSIE KIRKBY.

†702/13(2). A. PORRUM L. Hortal, a cultivated plant, found at Henfield, E. Sussex, by Mr E. PAYNE.

†704/1. HYACINTHUS COMOSUS L. Bagnall Copse, Oxon. ex H. W. POWELL.

713/1. COLCHICUM AUTUMNALE L. Winter examples, wood near Bath, N. Somerset, and Warminster, S. Wilts, Miss LOCKYER.

*718/14. JUNCUS COMPRESSUS Jacq. Fresh Water, Gribon, Isle of Mull (not *Gerardi*), J. S. L. GILMOUR.

718/15. J. GERARDI Lois., approaching and possibly may be var. GRACILIS Druce. Rysa, Hoy, Orkney, DRUCE.

718/16. J. MACER S. F. Gray. Burnham Beeches, Bucks, E. B. BASDEN, a comparatively recent introduction; Moel Siabod, Carnarvon, HAINES.

718/17. J. BUFONIUS L. Type, but variable, Hoy, Orkney, DRUCE; Kinlochewe, W. Ross, CORSTORPHINE and DRUCE.
Var. FASCICULARIS Koch. The Lizard, W. Cornwall, DRUCE.

721/2. TYPHA ANGUSTIFOLIA L. Shoreham, W. Sussex, DALGLEISH.

722/4. SPARGANIUM ANGUSTIFOLIUM Michx. Flowerdale, W. Ross, DRUCE and Hon. Mrs G. BARING.

723/1. ARUM ITALICUM Mill, type. Near Southwick, E. Sussex, PAYNE.
Var. IMMACULATUM DC. Swanage, Dorset, Sir M. ABBOT-ANDERSON.

727/1. LEMNA MINOR L. A pond, fifty or sixty feet across, in Sussex was estimated to have twenty-five million plants on it.

727/3. L. TRISULCA L. Flowering near Glastonbury, N. Somerset, DRUCE.

727/4. L. GIBBA L. Heyshott, W. Sussex, extremely gibbous, DALGLEISH.

729/1. ALISMA LANCEOLATUM With. Arnold's *Flora of Sussex* gives three localities—Birdham, Earnley, and near Sidlesham. The plant grows quite plentifully in Lewes Levels. Regarded in Arnold's time merely as a variety of *Alisma Plantago-aquatica*, the plant is now accepted as a good species by some botanists (*L.C.*, 11th ed., 1925; R. W. Butcher, Further Illustrations of Brit. Plants, Fig. 379), Dalgleish.

731/1. Elisma natans (L.) Buch. In abundance between two locks near the railway station of North Rode, Cheshire, D. H. Valentine; St David's, Pembroke, C. Oldham and B. Lloyd.

733/1. Damasonium Alisma Mill. The Starfruit was, in T. Hilton's time, known to occur on a certain pond on Chailey Common, Sussex. During recent years it has not been found there, but in August 1928 it again turned up at Chailey in a different spot, on a small and very dirty muddy cattle pond. One authority gives the habitat as "gravelly pools," but as above stated, this last find was in mud, Dalgleish.

(Most of the Potamogeton have been kindly determined by Mr W. H. Pearsall.)

737/1. Potamogeton gessnacensis Fisch., var. Richtsfeldii Fisch., f. hibernicus Hagström. (P. natans × polygonifolius). In the deepest part of the Basingstoke Canal near Byfleet, Surrey [Ref. K.], Lousley.

737/2. P. polygonifolius Pourr., var. lancifolius (Cham. & Schlecht.). In a still water pond at Bratton Fleming, 1000 ft., N. Devon, Dr Elliston Wright.

Var. amphibius (Fr.). In moss by rill leading into Llyn Idwal, Carnarvon, Lousley.

737/4. P. coloratus Hornem. Ham Ponds near Dover, E. Kent, Lousley.

737/5. P. alpinus Balb. Basingstoke Canal near Deep Cut Bridge, Frimley, Surrey, Lousley.

Var. Palmeri Druce. Basingstoke Canal near Ash Vale Station, Surrey, bearing fruits undoubtedly those of *P. alpinus*, Lousley. Also from same canal at Odiham, N. Hants, with fruits well developed, E. C. Wallace.

737/9. P. gramineus L., var. lacustris Fries. By Deep Cut Bridge, Frimley, Surrey [Ref. U.], Lousley.

737/11. × P. nitens Weber, var. subgramineus (Raunk.) Hagstr. and var. subintermedius Hagstr. Basingstoke Canal, about ¼ mile west of Byfleet, Surrey [Ref. A.], Lousley.

737/13. P. lucens L. Near Ilford, and in Cuckmere, Alfriston, E. Sussex; River Lark, Fornham St Genevieve, W. Suffolk, Lousley.

Var. acuminatus (Schum.) Fr. [Ref. E.] and var. ovalifolius M. & K. Basingstoke Canal ¼ mile west of Byfleet, Surrey, Lousley.

737/16. P. PERFOLIATUS L., var. OVALIFOLIUS Wallr. Wey Navigation Canal near Send [Ref. C.]; Basingstoke Canal near Woking, Surrey, LOUSLEY.

737/17. P. CRISPUS L., small simple leaved form, × MUCRONATUS = × P. LINTONI Fryer. Bath, N. Somerset, T. H. GREEN.

737/20. P. OBTUSIFOLIUS M. & K. Virginia Water, Surrey and Berks; Basingstoke Canal near Frimley and near Byfleet, Surrey, LOUSLEY.

737/22. P. MUCRONATUS Schrad. Levels near Iford, E. Sussex, LOUSLEY.

737/23. P. PUSILLUS L., var. TENUISSIMUS M. & K. Broagrave Level, Norfolk, 1909, C. E. MOSS.

737/25. P. PARNORMITANUS Biv.-Bern. Lewes Levels in company with *Potamogeton acutifolius* Link and *Potamogeton pusillus* L. Plant identified by Dr Druce, who recorded it (*Rep. B.E.C.*, 900, 1925) from this place. Not recorded in Arnold's *Flora of Sussex*, DALGLIESH.

737/27. P. TRICHOIDES Cham. & Schlecht. Levels near Iford, E. Sussex, LOUSLEY.

737/28. P. PECTINATUS L., var. DIFFUSUS Hagstr., forma PROTENSIS Wallr. Southill Lake, Beds, LITTLE.

Forma INTERRUPTUS (Kit.) Aschers. Wey Navigation Canal near Send. Surrey [Ref. B.], LOUSLEY.

†744/1. CYPERUS LONGUS L. Escape from a garden, Colwall, Hereford, DAY.

745/1. ELEOCHARIS PALUSTRIS (L.) Br. An extraordinary form in which the strongly creeping rootstock has at intervals the flower-stem rising direct from it, which is nearly leafless. Formby Sands, S. Lancs, Hon. Mr JUSTICE TALBOT.

*746/2. SCIRPUS MARITIMUS L., var. MACROSTACHYS (Willd.). Shalford, Surrey, J. G. LAWN, excellent specimens, new to the Surrey Flora.

746/7. S. CAESPITOSUS L. (See *Rep. B.E.C.*, iii., 180, 1912). Marshy slope on hillside south-west of Kinlochewe Hotel, W. Ross (Fernald's locality for *Eriophorum alpinum*), small specimens 4-6 inches high, DRUCE and CORSTORPHINE.

746/8. S. PAUCIFLORUS Lightf. Lough Neagh, Antrim; Hoy, Orkney, DRUCE.

747/2. ERIOPHORUM ANGUSTIFOLIUM Roth, var. ALPINUS Gaud. Ben Eay, W. Ross, DRUCE and CORSTORPHINE.

Var. ELATIUS Koch. Lerwick, Zetland, DRUCE; Pegal Burn, Hoy, Orkney, DRUCE and Hon. Mrs G. BARING.

747/3. E. GRACILE Roth. Reappeared in fair quantity at Holmesly Bog, S. Hants, where it has been sought for in vain for many years, HALL.

747/4. E. VAGINATUM L. Slender form, Ben Eay, W. Ross; Dalnaspidal, E. Perth, DRUCE and CORSTORPHINE.

749/1. SCHOENUS NIGRICANS L. N.W. Slope of Ben Eay, W. Ross, DRUCE and CORSTORPHINE, and as the forma NANUS Lange.

(Most of the CARICES have been kindly determined by Dr GEORGE KÜKENTHAL.)

753/1. CAREX PSEUDO-CYPERUS L., approaching var. MINOR Hampe. Near Bampton, Oxon, P. G. BEAK.

753/2. C. RIPARIA Curtis. Gainsborough, N. Lincs, Dr WILLOUGHBY SMITH.

753/3. C. ACUTIFORMIS Ehrh. Widdy Bank, Durham; bank of Tees near Cronkley, N.W. Yorks, a two stigmated form, DRUCE; near Wicken, Cambridge, GILMOUR.

753/7. C. INFLATA Huds. Gainsborough, N. Lincs, Dr WILLOUGHBY SMITH; near Muirkirk, Ayr, 1930, DRUCE.

Var. UTRICULATA (Boott) Bailey. Near Woodvale, S. Lancs, 1928. TRAVIS.

753/10. C. PENDULA Huds. Budleigh Salterton, S. Devon, Major ORME and DRUCE.

753/15. C. BINERVIS Sm. Plentiful and variable, especially on the west coast of Scotland; rare in Oxford, Berks, Bucks and Northants.

Var. ALPINA Drej. = C. SADLERI Linton, teste Kükenthal. Ben Laoigh, M. Perth, 3000 ft., 1916; Leverborough, S. Harris; Loch Langavat, N. Harris, 1928, DRUCE; N.W. slope of Ben Eay, W. Ross, CORSTORPHINE and CHAPPLE; ad var. ALPINA Drej. vergens, Corrie Ennich, Easterness, 1887, DRUCE.

753/17. C. DISTANS L. Stoke Bruern, Northants, 1907, F. COY; Wicken Fen, Cambridge, GILMOUR; Burnham, Bucks, BASDEN; Rock, E. Cornwall, DRUCE.

Forma MAJOR Kneucker, squamis ruficis utriculis pluricostatis. Loch Langavat side, N. Harris, 1928, DRUCE.

753/19. C. FULVA Host. Loch Langavat, N. Harris; Callinish, Lewis, 1928, DRUCE.

753/19. C. FULVA Host. (HORNSCHUCHIANA) × OEDERI = C. FULVA Good. Loch Langavat, N. Harris, 1928, DRUCE, teste KÜKENTHAL. A good hybrid.

753/21. C. LEPIDOCARPA Tausch. Loch an Larige, M. Perth; High Force, Durham; Winch Bridge, N.W. Yorks. DRUCE; Little Coates, Essex, BROWN.

753/22. C. OEDERI Retz. Hoy, Orkney, 1931; Loch Langavat, N. Harris, 1928, DRUCE; Ashdown Forset, E. Sussex, Miss PICKARD.
Var. ELATIOR Anders. Wicken Fen, Cambridge, F. BELLAMY.

753/32. C. PILULIFERA L. Fruit deformed with an Ustilago, Painswick, Gloster, Major ORME.

753/33. C. DIVERSICOLOR Crantz. A form with large fruits and spikelets, Loch Langavat, N. Harris, in the locality where Duncan found *C. hebridensis* A. Benn., which has not been found there since.

753/44. ×C. SPICULOSA, var. HEBRIDENSIS (A. Benn.). Mr Arthur Bennett so named a specimen found by Mr Duncan, of Scarp, in the Island of Harris. In 1928 I spent several days searching for it. After I had returned from Harris I had a specimen from Mr Bennett and a more precise localisation of the plant, but although I had worked over the spot, I saw nothing like it in Harris, nor should I have thought *salina* would have grown by an inland freshwater loch two or three hundred feet above sea-level. Dr Kükenthal, however, thinks that the specimen collected by Duncan is *Goodenowii* × *salina* = *spiculosa*, but goes no further.

753/45. C. ELATA × GOODENOWII. Stow Bedon, W. Norfolk, DRUCE.

753/46. C. GRACILIS Curt., var. FLUVIATILIS (Hartm.). Rhydd, Worcester, TOWNDROW; Clattercote Reservoir, Oxon, DRUCE.

753/49. C. GOODENOWII Gay. One of the most variable of our Sedges, of which eleven varieties are included in the List and two hybrids. I have recently submitted a large number of sheets from my Herbarium to Dr Kükenthal, and find that we practically agreed in their determination.

Var. RECTA (Fleisch.) A. & G. Quirang, Skye, LINTON; Gainsborough, N. Lincs, Dr WILLOUGHBY SMITH; Methuen, E. Perth; Glen Fee, Angus; Amhuinnsuidh, N. Harris; Altnaharra, W. Sutherland, DRUCE; Forfar Loch, Angus, DRUCE and CORSTORPHINE.

Var. STENOCARPA Kük. Clova Mountains, Angus, FOX; Ben Lawers, M. Perth, CUMMING; Methven, M. Perth, DRUCE.

Var. STRICTIFORMIS Bailey. A tall, upright form, resembling a slender *elata*. This is the *C. trinervis* Dégl. (teste Kükenthal) that Mr Marsden Jones is cultivating at Potterne.

Var. FULIGINOSA (A. Br.). An upright form with very dark spikelets, Burnham, Bucks; Altnaharra, W. Sutherland; Muirkirk, Ayr, DRUCE.
Var. CHLOROSTACHYA (Reichb.) Asch. Boat of Garten, Easterness; Tarbert, N. Harris; Bullingdon, Oxon, DRUCE.

753/61. C. PAIRAEI F. Schultz. Slapton Lea, S. Devon, 1931, DRUCE.

753/62. C. DIVULSA Stokes. Near Fareham, S. Hants, HALL; Downham Market, Norfolk, GILMOUR and E. P. PETCH, a curious plant.

753/63. ×C. BOENNINGHAUSIANA Weihe. Littlefield Common, Surrey, J. G. LAWN, a new locality.

753/68. C. DIVISA Huds., f. RIVULARIS Kük., teste Kükenthal. Grimsby, N. Lincs, Rev. W. W. MASON.

765/1. PHALARIS MINOR Retz. Roadside, Heyghnam, W. Gloster, GAMBIER PARRY.

765/7. P. PARADOXA L. Sharpness, W. Gloster, J. EVANS, teste HOWARTH.

†765/8. P. ANGUSTA Nees. Sapey, E. Sussex, close to the Kent border, Hon. Mr JUSTICE TALBOT.

767/1. SAVASTANA ODORATA (L.) Scribner. HIEROCHLOE BOREALIS R. & S. A small patch, well established, on the bank of the river Cart, Blythswood, Renfrew, J. R. LEE. The old church of Inchinnan is only half a mile away, but on the opposite side of the river, and Paisley Abbey is five or six miles distant. Mr Lee thinks that the plant can hardly have been there long, for the locality was formerly well known to local botanists, and suggests that it is a casual introduced with ship's ballast. It is a good county record for Renfrew, and Mr Lee, who has done so much for this area, is to be warmly congratulated on his discovery.

*770/4. ALOPECURUS BULBOSUS Gouan. Altnaharra, W. Sutherland; marsh by the river Wick, Caithness, 1931, T. J. FOGGITT. New to Scotland. Specimen seen by W. O. HOWARTH.

780/2. AGROSTIS ALBA L., var. STOLONIFERA (L.). Saunton, N. Devon, DRUCE.

780/6. A. CANINA L., sub-var. NIGRESCENS. Loch an Lairige, M. Perth, 1930, DRUCE, teste HOWARTH.

782/1. POLYPOGON MONSPELIENSIS (L.) Desf. This species has not been seen for several years in this well-known station at Porchester, S. Hants. This year it occurred in great abundance with ×*P. littoralis* in Farlington Marshes, about four miles further east. This is not the station referred to in Townsend's *Flora of Hampshire*, " half a mile due

South of Farlington Church," but appears more likely to be the original station of Lobel recorded in 1605, "proxime salinas et antiquas aedes Drayton." Farlington and Drayton are contiguous and nowadays practically synonymous both being merged into one and the same suburb of Portsmouth. Strictly speaking Drayton is about half-a-mile west of Farlington. These grasses are, of course, indigenous in this locality and cover several acres of ground, HALL.

783/1. CALAMAGROSTIS EPIGEIOS (L.) Roth. (? var. DENSIFLORA Ledeb. E. Drabble). Little Park, Ampthill, Beds, C. CROUCH, ex LITTLE; Wicken Fen, Cambridge, Miss TODD; Castle Eden Dene, Durham, H. E. Fox.

783/4. C. BOREALIS Laest. Holkham, W. Norfolk, Miss TODD.

785/1. APERA SPICA-VENTI (L.) Beauv., var. PURPUREA (Gaud.) Dr. Marston Brickyards, Oxon, DRUCE.

787/1. AMMOPHILA ARENARIA (L.) Link. Rock, E. Cornwall, DRUCE.

†788/1. LAGURUS OVATUS L. Dawlish Warren, S. Devon, Miss LEY, ex Miss L. E. RICHARDS.

791/1. DESCHAMPSIA CAESPITOSA (L.) Beauv., var. PARVIFLORA A. & G. Farnham Common, Bucks, BASDEN, teste HOWARTH.

793/4. ? TRISETUM PANICEUM (L.) Pers. Burton-on-Trent, Staffs, 1930, DRUCE, teste HOWARTH.

795/1. ARRHENATHERUM ELATIUS (L.) M. & K., var. (monstr.) VEGETA. Glynde Goods-yard, E. Sussex, Miss PICKARD.

809/3. KOELERIA BRITANNICA (Domin). *Lincoln, N. Lincs, Rev. W. W. MASON; *near South Stack, Anglesey, 1930; *Marston Measey, N. Wilts, 1931, DRUCE, teste HOWARTH.

818/2. MELICA UNIFLORA Retz., var. ALBIFLORA. Colwall, Hereford, R. F. TOWNDROW, white glumes, ? shade-grown.

824/1. POA CHAIXII Vill. Vernham Dean, N. Hants, probably introduced with Cherry Laurels, DRUCE.

824/5. P. PALUSTRIS L. Edge of allotment garden, Byfleet, Surrey, Lady DAVY.

824/7. P. NEMORALIS L. Dinton, S. Wilts, GODDARD.
? Var. COARCTATA Gaud. Teesdale, Durham, 1873, Rev. H. E. Fox; Banchory, Kincardine, 1929, DRUCE, teste HOWARTH.

824/14. P. ANNUA L., var. PERENNIS Druce. Not rare in Orkney, Rysa, Hoy, etc., DRUCE.

Var. AQUATICA A. & G. Dinton, S. Wilts, GODDARD.

825/1. GLYCERIA. Mr Howarth remarks on a plant gathered by G. C. DRUCE at Wytham, Berks, 1931, "nearest to *Glyceria aquatica* Wahlb., but possibly a hybrid between *G. aquatica* and one of the forms of *G. fluitans*, such as *G. plicata* Fr."

825/3. G. DECLINATA Bréb. Wytham, Berks, 1931, DRUCE, teste HOWARTH.

*825/4. G. DISTANS (L.) Wahl., var. PROSTRATA Beeby. Abundant at Gribon, Isle of Mull, GILMOUR.

825/5. G. MARITIMA (L.) M. & K., var. HIBERNICA Druce, in *Rep. B.E.C.*, 431, 1916. Fishbourne near Chichester, W. Sussex, 1931, Miss PICKARD.

825/7. G. BORRERI Bab. Shoreham, W. Sussex, 1931, Miss PICKARD, teste HOWARTH.

*825/8. G. PROCUMBENS Dum. Grimsby, N. Lincs, 1931, ex Dr WILLOUGHBY SMITH, teste HOWARTH.

826/3. FESTUCA ARUNDINACEA Schreb., forma. Barry, Glamorgan. 1930, DRUCE, teste HOWARTH.

Var. STRICTIOR Hack. Budleigh Salterton, S. Devon, 1931, DRUCE. teste HOWARTH.

826/4. F. ELATIOR × LOLIUM PERENNE = ADSCENDENS (Retz.). Egloshayle Marsh near Wadebridge, E. Cornwall, 1931, E. THURSTON, teste HOWARTH.

826/7. F. RUBRA L., var. PRUINOSA (Hack.) Howarth. Rock, E. Cornwall, 1931, DRUCE; Valley, Anglesey, 1930, DRUCE, merging into var. GLAUCESCENS (Hack.) How., teste HOWARTH.

826/14. F. GLAUCA Lam. Aberfraw Common, Anglesey, 1930, DRUCE, teste HOWARTH.

*826/16. F. AMBIGUA Le Gall. Sandy bay, Woolacombe, N. Devon, Lady DAVY, an interesting extension of its range.

827/16. BROMUS SECALINUS L. Cothill and Basildon, Berks, DRUCE; Glynde, E. Sussex, Miss PICKARD, teste HOWARTH.

827/17. B. PRATENSIS Ehrh. Basildon, Berks; Pixey's Mead, Oxon, DRUCE, teste HOWARTH.

827/19. B. HORDEACEUS L., ? var. LEPTOSTACHYS (Pers.) Beck. Burton-on-Trent, Staffs, DRUCE, teste HOWARTH.

827/19(2). B. BRITANNICUS I. A. Will. (PSEUDO-RACEMOSUS A. & G.). Cathay's Park, Glamorgan, Miss VACHELL; Glynde, E. Sussex, Miss PICKARD.

827/21. BROMUS INTERRUPTUS Druce. With Sainfoin, Glynde, E. Sussex, Miss PICKARD; Taynton, Oxon, 1931, DRUCE.

827/22. B. ARVENSIS L. Port Meadow, Oxford, GAMBIER PARRY.

827/27. B. SQUARROSUS L. Avonmouth, W. Gloster, J. EVANS, teste HOWARTH.

†827/29. B. JAPONICUS Thunb. Burnham-on-Sea, N. Somerset, Lady DAVY and W. D. MILLER, as *B. patulus*.

828/2. BRACHYPODIUM PINNATUM (L.) Beauv. Thorncomb, Dorset, GODDARD.

†829/4. LOLIUM ITALICUM A. Br., var. COMPOSITUM Mutel. Shamley, Surrey, LAWN.

830/1. AGROPYRON JUNCEUM Beauv. Rock, E. Cornwall, fine specimens approaching var. MEGASTACHYUM (Fr.) Dr., DRUCE.
×REPENS = A. HACKELII Druce. Rock, E. Cornwall, 1931, DRUCE.

830/4. A. REPENS L., var. LASIORACHIS Hack. Kirkwall, Orkney, 1931, DRUCE.

832/12. TRITICUM VENTRICOSUM (Tausch) Ces. Sharpness, W. Gloster, Miss TODD; Burton-on-Trent, Staffs, DRUCE and Sir R. CURTIS.

835/12. ? HORDEUM DISTICHON L., var. NUDUM L. Burton-on-Trent, Staffs, 1930, DRUCE.

839/2. JUNIPERUS SIBIRICA Burgs. Near Rackwick, Hoy, Orkney, DRUCE and Hon. Mrs G. BARING.

844/7. EQUISETUM HYEMALE L. Boat of Garten, Easterness, 1931, DRUCE and CORSTORPHINE. Spread over a larger area than when I discovered it there in 1884, DRUCE.

847/1. EUPTERIS AQUILINA (L.) Newm. A small specimen growing on a wall, Louth, N. Lincs, Miss MARSDEN.

854/1. POLYSTICHUM SETIFERUM (Forsk.) Woynar. A subtripinnate form, Woody Bay, N. Devon, DRUCE, teste STANSFIELD.

865/1. BOTRYCHIUM LUNARIA (L.) Sw. W. Grinstead, S. Wilts, Miss GULLICK.

876/5. CHARA HISPIDA L. Hickling, E. Norfolk, Miss TODD.

876/17. C. DELICATULA Ag. Pegal Burn, Hoy, Orkney, 1931, DRUCE.

THE FLORA OF SURREY.

G. Claridge Druce.

While some parts of this important Flora are exceptionally good, especially those dealing with our native species, the treatment is by no means uniform. Changes of citation are frequent and researches into ancient literature are by no means exhaustive. Mr Salmon has frequently chosen later names than the earlier published ones, thus, often Britten appears as the authority for plants previously recorded by Irvine. Obviously proper citation is to take the oldest reference first, and to work in the others when given in sequence. Surrey was almost snowed under by workers and this made it a most difficult task to carry out, but one cannot say it has been satisfactorily done.

The title and history of our Reports are incomplete and misleading, since under the principal works cited my name does not appear, and as regards our Report the information is inaccurate. It should be:—The Botanical Society of London was founded on July 27, 1836, under the Presidency of Dr J. E. Gray. Its first Distributor in 1844 was H. C. Watson. In 1857 it was reformed as the Thirsk Natural History Society, which carried on till 1866, when on Mr Baker's removal to London it became in 1869 "The Botanical Exchange Club," continuing as such till 1878. In 1879 it appeared as the Botanical Exchange Club of the British Isles under the Secretaryship of Mr C. Bailey, who continued as its sole officer till his resignation in 1902, when I consented to manage its affairs. In 1909 the name was varied to the Botanical Society and Exchange Club of the British Isles, which led to a satisfactory increase of membership from 30 to over 600. Since 1902, I have been manager and prepared the whole of the Secretary's Reports.

The article by Mr Will. F. Taylor on Topography supplies a much needed want. So, too, does that by Margaret Chorley Crosfield on the Geology of the County, but these were printed off ten years ago.

Prof. G. S. Boulger wrote in his usually excellent manner on the Outlines of the Botanical History of Surrey. The History began in the early days, for the Father of English Botany, W. Turner, for a time lived at Kew and supplied 15 of the 100 species which Christopher Merrett mentioned for Surrey in his "Pinax." Gerard, 2nd edition, edited by Thomas Johnson, added nine more, one of which at least was due to John Goodyer of Maple Durham. Parkinson, in his "Theatrum" of 1640, had 18 Surrey notes. William How, 1650, in his "Phytologia," and Robert Turner in his "Botanologia" have a few more—both writers citing *Dentaria* from near Croydon. Merrett's list I have alluded to, but there are 15 more in MS. in the author's copy in the British Museum: they include *Ajuga Chamaepitys*. Boulger says that Charles Du Bois had a Botanical Garden at Mitcham and made collections "mostly of Indian plants," now preserved at Oxford. Something more might have been said about Du Bois and his work, but this part of the Flora was written prior to my article on him in *Rep. B.E.C.*, 1927. The Du Bois' Indian plants are remarkably good and are among the earliest ones sent to Britain, but the African and American specimens are also fine. The English collection is very good and offers a score of the earliest Surrey records. One would have wished that Prof. Boulger could have completed the Botanologia so that the notes on Beeby, Bennett, Marshall and Rev. H. E. Fox could have been done by the same hand. Mr Salmon was especially fortunate in having such able workers to lighten the task of preparing his County Flora.

The text, especially in the earlier portion, abounds with interesting and critical notes, and botanical information is given in an excellent manner. Surrey had a large array of critical workers, but in Beeby, Bennett and Salmon, it had a trio who outshone their compeers and each of them has done much to build up so large a structure. Each of these had meant to have compiled a Flora of the County, and we can judge from the Botany for the Victoria County History, which Beeby wrote, how qualified he was for the task. One feels that much valuable material perished with his untimely death.

In going through the Flora for the purpose of this Review, one has derived great pleasure from reading so much that was excellent. In studying what were the constituents of so rich a Flora one has missed in what is usually supplied the usual statistics of native and introduced species, and of the total number of species, varieties and hybrids. One was also sadly impressed with the large number of records omitted which had been printed in the Reports of the Botanical Exchange Club, and of those which Lady Davy and myself had sent in correspondence. Many of these, of course, were too late for insertion. As the omissions are so numerous it seems well to bring together these records (and I practically limit them to new species or varieties) so that subscribers to the Flora may insert a print in their copy, and thus be spared the trouble and worry of recording plants already on record or in hunting up their history. Most of them are adventives but, as the text freely includes aliens (*e.g.*, *Trifolium spinosum* is included but *T. alcanu* is omitted), they should find a place. It has been a task, but one trusts that it may be found useful. Again, it may be said that many are microforms, but if *Bursa Brittonii* is included, why exclude *B. turoniensis* ?. If *Taraxacum Nordstedtii* is given, why not *T. faeroense?* There are many more in the Rubi but this genus will need to be rewritten. Over 20 species are not noticed. These remarks are not meant to refer to the latter part of the work which has been so well edited by Mr Pearsall. The former part had been printed off—and it had been done regardless of cost and space—so that Pearsall's work was greatly taken up with the difficult task of cutting down, but it was especially in this portion of the Flora that one wanted details and plenty of localities. We are grateful to him for doing so much by the making of bricks without straw.

The possessor will have a handsome volume which contains a vast mass of material though, it may be, an Oliver might want more.

1/3. CLEMATIS VITICELLA L. Alien. Esher, *Beeby* in *Rep. B.E.C.*, 8, 1914.

2/1. THALICTRUM FLAVUM L., var. SPHAEROCARPUM (L. & C.). Blackwater, *Beeby* in *Rep. B.E.C.*, 102, 1884.

6/3. RANUNCULUS ACER L. First evidence, Dulwich, *Hb. Du Bois*, 1699, as a form whose petals turn white.

7/7. R. FLAMMULA L., var. ALISMIFOLIUS Glaab. Sheen Common, *Druce* in *Rep. B.E.C.*, 1, 1911.

7/10. R. SARDOUS Cr., var. TUBERCULATUS Celak. Woking, *Druce* in *Rep. B.E.C.*, 81, 1927.

7/14. R. TRILOBUS Desf. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

7/15. R. MURICATUS L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

9/1. HELLEBORUS VIRIDIS L., var. GUTTATUS. *Druce* in *Rep. B.E.C.*, 762, 1925, is earlier.

12/3. NIGELLA SATIVA L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

23/2. GLAUCIUM CORNICULATUM Curt. (PHOENICEUM). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

32/4. FUMARIA PURPUREA Pugsl. "Pictus saturate purpureo," Mitcham, *Hb. Du Bois*, c. 1700. See *Rep. B.E.C.*, 467, 1927.

32/14. F. AGRARIA Lag. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859; Limpsfield, *Rev. H. E. Fox* in *Rep. B.E.C.*, 387, 1927.

35/4. RADICULA ISLANDICA Druce. (NASTURTIUM PALUSTRE). First evidence, Peckham Field, *Hb. Du Bois*, c. 1700.

Var. MICROCARPA. West Barnes, *C. E. Britton* in *Rep. B.E.C.*, 806, 1919.

37/13. ARABIS ARENOSA Scop. ? Wandsworth, *Irvine* in *Phyt.*, 1854.

P. 125. The Headley ARABIS is not GERARDI.

42/10. ALYSSUM MARITIMUM Lam. (KONIGA). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

44/1. EROPHILA VERNA (L.) Meyer. Witley, *Rev. E. S. Marshall* in *Rep. B.E.C.*, 434, 1894; Wokingham, Gomshall, *C. E. Salmon* in *Journ. Bot.*, 234, 1928.

Var SPARSIPILA (Jord.) O.E.S. Reigate, *C. E. Salmon* in *Journ. Bot.*, 236, 1928.

Var. INCONSPICUA (Ros.) O.E.S. Richmond, *C. B. Clarke* in *Rep. B.E.C.*, 183, 1929.

Var. RADIANS (Ros.) O.E.S. Wisley [O.18], *Druce* in *Rep. B.E.C.*, 183, 1929.

Var. CABILLONENSIS O.E.S. Wimbledon, 1820, *Blake* in *Hb. Druce*; Farnham, *Clarke*; Reigate, *C. E. Salmon* in *Journ. Bot.*, 236, 1928; Milford, *E. S. Marshall*; Pyrford, *Druce*.

Var. AMERICANA O.E.S. Chilworth, *C. E. Salmon* in *Journ. Bot.*, 237, 1928.

Var. KROCKERI O.E.S. (as STENOCARPA). Milford, *E. S. Marshall* in *Rep. B.E.C.*, 188, 1929; Wisley [O.18], 1915, *Druce*; Byfleet, 1929, *Druce* in *Rep. B.E.C.*, 181, 1929.

Var. ACROCARPA O.E.S. Milford, *Comber*; Chilworth, *C. E. Salmon*; Byfleet, Newark, Wisley, *Druce* in *Rep. B.E.C.*, 188, 1929.

Var. SESSILIFLORA O.E.S. Milford, as "perhaps *virescens*" in *Hb. Druce*, *E. S. Marshall* in *Rep. B.E.C.*, 189, 1929.

44/1(2). E. BOERHAAVII Dum. Reigate, *C. E. Salmon* in *Journ. Bot.*, 239, 1928.

Var. MACROPHYLLA O.E.S. Croydon, *A. Bennett* in *Rep. B.E.C.*, 609, 1928.

Var. CRASSICARPA O.E.S. Headley, *C. E. Salmon*; Milford, *E. S. Marshall* in *Journ. Bot.*, 239, 1928.

Var. INFLATA (Wats.). Milford, as *virescens*, *E. S. Marshall* in *Rep. B.E.C.*, 192, 1929.

Var. DECIPIENS O.E.S. Milford, Witley, *E. S. Marshall*; Reigate, *C. E. Salmon* in *Rep. B.E.C.*, 192, 1929.

Sub-var. LINEARIFOLIA O.E.S. Reigate, *C. E. Salmon* in *Journ. Bot.*, 240, 1928.

Var. BRACHYCARPA (Jord.) O.E.S. Reigate, *C. E. Salmon* in *Rep. B.E.C.*, 194, 1929.

Mr Salmon sent a valuable paper on the genus *Erophila* to the *Journal of Botany*, 239, 1928.

48/1. WILCKIA MARITIMA Scop. (MALCOMIA). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859; Thames Bank in Kew, *J. G. Baker* in *Rep. B.E.C.*, 40, 1880; Richmond and Kew, *Rep. B.E.C.*, 12, 1877.

48/3. W. AFRICANA (L.) Muell. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

48/4. W. LITTOREA (L.) Dr. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

49/3. SISYMBRIUM ALTISSIMUM L. (PANNONICUM Jacq.) Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859, vice 1877.

49/4. S. ORIENTALE (L.). (COLUMNAE Jacq.) Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859, vice 1877.

49/11. S. PYRENAICUM (L.) Vill. (AUSTRIACUM Jacq.) Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

49/25. S. RICHARDSONII Sweet. (DESCURAINIA.) Alien. Byfleet, *Lady Davy* in *Rep. B.E.C.*, 433, 1924.

54/6. BRASSICA CHEIRANTHOS Vill. Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859.

54/17. B. DISSECTA Boiss. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

54/18. B. HISPIDA Boiss. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

54/20. B. GALLICA (Willd.) Dr. (POLLICHII). Merton, *C. E. Britton* in *Rep. B.E.C.*, 895, 1928.

54/21. B. ERUCASTRUM L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

54/22. B. INCANA Schultz. (ADPRESSA). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

55/3. DIPLOTAXIS ERUCOIDES DC. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

D. BRACTEATA. See BRASSICA ERUCASTRUM.

56/1. ERUCA SATIVA Mill. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

57/1. MORICANDIA ARVENSIS DC. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

58/1. CARRICHTERA ANNUA Ger. (VELLA ANNUA L.). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

59/2. BURSA ABCISSA (E. At.). Byfleet, *Druce* in *Rep. B.E.C.*, 103, 1929.

59/7. B. BRITTONII (E. At.) Oxted, *J. E. Lousley* in *Rep. B.E.C.*, 564, 1927.

59/9. B. DRUCEANA (E. At.). Wimbledon, *Druce* in *Rep. B.E.C.*, 725, 1928.

59/20. B. PATAGONICA (E. At.). Kew, *Miss Todd* in *Rep. B.E.C.*, 169, 1923.

59/24. B. ROBUSTA (E. At.). Byfleet, *Druce* in *Rep. B.E.C.*, 104, 1929.

59/24(2). B. RUBELLA Reuter. ? adventive. Guildford, *Druce* in *Rep. B.E.C.*, 609, 1928.

59/25. B. SINUOSA (E. At.). Putney, *Fox* in *Rep. B.E.C.*, 106, 1926; Oxted, *Lousley*.

59/27. B. TURONIENSIS (E. At.). Pyrford, Byfleet, *Druce* in *Rep. B.E.C.*, 208, 1920; Oxted (as *mediterranea*), *Lousley* in *Rep. B.E.C.*, 104, 1929.

61/1. LEPIDIUM GRAMINIFOLIUM L. Alien. Kew Bridge, *Irvine* in *Phyt.*, 1859; Kew Bridge, *H. C. Watson* in *L.B.E.C.*, 10, 1872-4; Warlingham, *Beadell* in *Rep. B.E.C.*, 170, 1923.

61/22. L. DENSIFLORUM Schrad. Alien. Pyrford, *Lady Davy* and *Druce* in *Rep. B.E.C.*, 49, 1910; Mickleham, 1920, *Bishop*.

76/1. RAPISTRUM PERENNE All. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859; Guildford, 1920, *Druce*.

76/3. R. RUGOSUM All. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

78/1. ENARTHROCARPUS LYRATUS DC. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

80/3. RAPHANUS LANDRA Moretti. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

85/7. RESEDA GRACILIS Ten. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

88/8. VIOLA ODORATA L., var. TENERRIMA (Wiesb.). *Beeby* in *Journ. Bot.*, 67, 1892.

88/9. V. HIRTA L., var. INCONCINNA J. Briq. *Rev. H. E. Fox*. 1926.

88/14. V. CONTEMPTA Jord. Shere, Wisley, *Rep. B.E.C.*, 195, 1926.

Var. PATULA Drabble. Shere, *Drabble* in *Journ. Bot.*, 74 1929.

88/16. V. CANTIANA Drabble. Brockham, 1840, *Rep. B.E.C.*, 195, 1926.

88/17. V. MONTICOLA Jord. Gomshall, *Drabble*; Godalming, *Bishop* in *Rep. B.E.C.*, 195, 1926.

88/19. V. LEJEUNEI Jord. Witley, *Chittenden* in *Rep. B.E.C.*, 194, 1926; Claygate, Thames Ditton, *Drabble* in *Rep. B.E.C.*, 195, 1926.

88/25. V. LATIFOLIA Drabble. Pyrford, *Druce*; Cobham, *Drabble*; Epsom, *Lousley* in *Rep. B.E.C.*, 458, 1930.

88/27. V. ANGLICA Drabble. Cobham, Godstone, *C. E. Salmon* in *Rep. B.E.C.*, 194, 1926.

88/31. V. LEPIDA Jord. Godalming, *Bishop*; Gomshall, *C. E. Salmon* in *Rep. B.E.C.*, 195, 1926.

95/2. SAPONARIA VACCARIA L. First record. Wandsworth, *Irvine* in *Phyt.*, 1859.

96/7. SILENE GALLICA L. Alien. First record, Thames-side, *Baker* in *Rep. B.E.C.*, 4, 1880.

P. 173. The SILENE DUBIA Herb. is really the Linnean NUTANS which needs a new name.

P. 184. The correct name of 154 is STELLARIA DILLENIANA Moench; our PALUSTRIS, with glaucous leaves, coming under it as a var. First evidence, Peckham Fields, *Hb. Du Bois*, c. 1700.

P. 189. The double form of SAGINA PROCUMBENS referred to is var. DAVIESII Druce in *Rep. B.E.C.*, 279, 1918.

112/7. HYPERICUM MONTANUM L. No allusion is made to var. SCABRUM Koch in *Rep. B.E.C.*, 20, 1926, from White Down, *Biddiscombe*.

115/2. ALTHAEA HIRSUTA L. Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859.

116/2. LAVATERA CRETICA L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

116/4. L. OLBIA L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859

116/10. L. PUNCTATA All. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

117/6. MALVA AMBIGUA Guss. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

117/9. M. PARVIFLORA L. Alien. Shelford, *D. Chase* in *Rep. B.E.C.*, 568, 1924.

Var. MICROCARPA F. & P. Wandsworth, *Irvine* in *Phyt.*, 1859.

117/11. M. HISPANICA L. Alien. Pyrford, *Lady Davy* and *Druce* in *Rep. B.E.C.*, 16, 1920.

122/1. HIBISCUS TRIONUM L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

123/1. TILIA PLATYPHYLLOS Scop. Alien. Streatham, *Hb. Du Bois*, c. 1700.

125/5. LINUM GRANDIFLORUM Desf. Alien. Thames, near Kew, *J. G. Baker* in *Rep. B.E.C.*, 49, 1880.

127/6. GERANIUM ENDRESSI Gay. Alien. Wokingham, *Beadell* in *Rep. B.E.C.*, 175, 1923.

127/19. G. NODOSUM L. Alien. Warlingham, *Beadell* in *Rep. B.E.C.*, 64, 1914.

127/23. G. CAROLINIANUM L. Alien. Mitcham, *C. E. Britton* in *Rep. B.E.C.*, 406, 1916.

128/3. ERODIUM COMMIXTUM Jord. Pyrford, *Lousley* in *Rep. B.E.C.*, 568, 1929.

128/8. E. LITTOREUM Lem. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

128/11. E. CICONIUM Willd. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

136/1. ILEX AQUIFOLIUM L., var. LAURIFOLIUM Lej. Thursley, *Mrs Wedgwood* in *Rep. B.E.C.*, 109, 1929.

142/3. ACER PLATANOIDES L. Boxhill, *Druce* in *Rep. B.E.C.*, 110, 1926.

145/4. LUPINUS ANGUSTIFOLIUS L. Alien. Oxted, *Rev. E. C. Crutwell* in *Rep. B.E.C.*, 279, 1921.

152/9. TRIGONELLA PROCUMBENS Reichb. (CAERULEA). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

153/6. MEDICAGO MINIMA Desr., var. LONGISETA DC. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

Var. RECTA Willd. Wandsworth, *Irvine* in *Phyt.*, 1859.

153/11. M. ITALICA Steud. (ORBICULARIS All.). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

153/12. M. SCUTELLATA Mill. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

153/21. M. SPHAEROCARPA Bert. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

153/25. M. TENOREANA Ser. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

153/28. M. ECHINUS DC. Alien. Putney, *H. E. Fox* in *Rep. B.E.C.*, 110, 1926.

154/5. MELILOTUS SICULA Jackson. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

154/7. M. SULCATA Desr. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

155/1. TRIFOLIUM MEDIUM Huds., var. BRACHYCALYCINUM Rouy. Buriton, *Biddiscombe* in *Rep. B.E.C.*, 303, 1927.

155/6. T. STELLATUM L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

155/8. T. MARITIMUM Huds. Doubtless alien. Earliest record, Wandsworth, *Irvine* in *Phyt.*, 1859.

155/32. T. CONSTANTINOPOLITANUM Ser. Alien. Kew and Richmond, *Beadell* in *Rep. B.E.C.*, 407, 1916.

155/36. T. TENUIFOLIUM Ten. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

155/50. T. AUREUM Poll. Alien. Kew, Thames Bank, *J. G. Baker* in *Rep. B.E.C.*, 47, 1881.

169/1. SCORPIURUS SULCATA L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

171/1. ORNITHOPUS COMPRESSUS L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

176/2. VICIA TENUIFOLIA Roth. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859; Warlingham, *Beadell* in *Rep. B.E.C.*, 180, 1923

176/6. V. VARIA Host. (DASYCARPA). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859; Warlingham, *Beadell* in *Rep. B.E.C.*, 180, 1923.

176/7. V. BITHYNICA L. Alien. Woking and Weybridge. *Lady Davy* in *Rep. B.E.C.*, 180, 1923.

176/17. V. PSEUDO-CRACCA Bert. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

176/25. V. NARBONENSIS L. Alien. Warlingham, *Beadell* in *Rep. B.E.C.*, 1923.

176/32. V. BIVONEA Rafin. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

176/38. V. PUBESCENS Link. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

178/8. LATHYRUS NISSOLIA L., var. GRAMIMEUS Beck. Lower Morden, *C. E. Britton* in *Rep. B.E.C.*, 34, 1923.

Surrey specimens of L. SYLVESTRIS and L. PALUSTRIS are in the *Herb. Du Bois*, c. 1700.

183/9. PRUNUS SEROTINA Ehrh. Alien. Peper Harrow. *J. E. Little* in *Rep. B.E.C.*, 769, 1925.

183/9(2). P. LUSITANICUS L. Alien. Cranley, *Grierson* in *Rep. B.E.C.*, 20, 1929.

Many new records of RUBUS have been made since the text was printed, and there is a great change of names. Mr Wm. Watson has done much intensive work on the group.

P. 283. A POTENTILLA in Bennett Hb. is said " ad *dacicum* accedens." The obsolete name P. TORMENTILLA is retained.

189/12. POTENTILLA SUPINA L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

189/16. P. HIRTA L. Alien. Kew Green, *J. G. Baker* in *L.B.E.C.*, 15, 1867.

196/7. CRATAEGUS ARONIA Bosc. Alien. Leatherhead, *C. E. Britton* in *Rep. B.E.C.*, 25, 1926.

P. 317. Prof. Graebner still believes his SEDUM DRUCEI to be distinct, and Prof. Domin of Prague, who is testing it, also considers it has claims, but he is still testing it.

216/1. MYRIOPHYLLUM SPICATUM L. Early specimens are in *Herb. Du Bois* from Clapham, c. 1700.

217/2. CALLITRICHE OBTUSANGULA le Gall. First record. Barns Common, *L.B.E.C.*, 19, 1876.

219/2. LYTHRUM HYSSOPIFOLIA L. Earliest record, Wandsworth, *Irvine* in *Phyt.*, 1859.

220/6. EPILOBIUM LAMYI × LANCEOLATUM. Milford, *E. S. Marshall* in *Journ. Bot.*, 449, 1894.

239/1. ERYNGIUM CAMPESTRE L. Alien. Guildford, *Clarke* in *Rep. B.E.C.*, 839, 1929.

245/4. BUPLEURUM OPACUM Lange. (ARISTATUM). Wandsworth, *Irvine* in *Phyt.*, 1859.

245/6. B. LANCIFOLIUM Hornem. (PROTRACTUM). Wandsworth, *Irvine* in *Phyt.*, 1859.

247/3. APIUM NODIFLORUM Reichb., var. PSEUDO-REPENS (Wats.) Dr. Shalford, *Burdon* in *Rep. B.E.C.*, 515, 1930.

276/4. PEUCEDANUM (ANETHUM) GRAVEOLENS L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

287/1. SAMBUCUS RACEMOSA L. Alien. Warlingham, *Beadell* in *Rep. B.E.C.*, 187, 1923.

295/5. ASPERULA ARVENSIS L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

304/2. VALERIANELLA ERIOCARPA Desr. Staines Lane, *Lady Davy* in *Rep. B.E.C.*, 287, 1923.

308/3. SCABIOSA SUAVEOLENS Desf. (VIRGAPASTORIS). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

312/1. SOLIDAGO VIRGAUREA L., var. INTERRUPTA Druce. Holmbury, *Countess Granville* in *Rep. B.E.C.*, 335, 1930.

312/5. S. SEROTINA Ait. Milford, *Rev. S. Laing* in *Rep. B.E.C.*, 575, 1924.

318/6. ASTER LANCEOLATUS Willd. Pyrford, *Lady Davy* and *Druce* in *Rep. B.E.C.*, 35, 1914.

341/1. XANTHIUM STRUMARIUM L. Wandsworth, *Irvine* in *Phyt.*, 1859.

368/4. ANTHEMIS COTULA L. First record, Peckham Field, *Stonestreet* in *Hb. Du Bois*, c. 1700.

371/3. MATRICARIA SUAVEOLENS Buch. Earliest record, as *M. Chamomilla*, var. *discoidea*, Kew, 1871, *J. G. Baker*.

371/10. M. TCHICHATCHEWI (Boiss.). Alien. Byfleet, *Lady Davy* in *Rep. B.E.C.*, 281, 1921.

385/1. CALENDULA OFFICINALIS L. Alien. Byfleet, *Druce*.

385/2. C. ARVENSIS L. Alien. Pyrford, *Mrs Wedgwood* in *Rep. B.E.C.*, 388, 1921.

385/4. C. PERSICA C. A. Mey. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

393/1. ARCTIUM MINUS × NEMOROSUM. Lower Morden, *C. E. Britton* in *Rep. B.E.C.*, 571, 1910.

395/2. CARDUUS CRISPUS L. The true plant, Dorking, *H. W. Monckton* in *Rep. B.E.C.*, 385, 1921.

396/8. CIRSIUM ARVENSE × LANCEOLATUM. Bramley, *J. Comber* in *Rep. B.E.C.*, 573, 1916.

The untenable name CNICUS is retained instead of CIRSIUM.

405/12. CENTAUREA CYANUS L. Earlest record, Mitcham, *Hb. Du Bois*, c. 1700.

405/13. C. SCABIOSA L. Earliest record, Mitcham, *Hb. Du Bois*, c. 1700.

405/16. C. ASPERA Willd. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

405/40. C. IBERICA Trev. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

407/3. CARTHAMUS TINCTORIUS L. Alien. Guildford, *Clarke*; Warlingham, *Beadell* in *Rep. B.E.C.*, 192, 1923.

416/9. CREPIS FOETIDA L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

419/83. HIERACIUM PELLUCIDUM Laest. Native. Dorking, *J. Sherard* in *Hb. Du Bois*, c. 1700.

419/229. H. CANTIANUM F.J.H. New locality, Pyrford, *Druce* in *Rep. B.E.C.*, 580, 1924.

There are several other changes in the Hawkweeds necessary, and a few additions.

423/3. TARAXACUM DECIPIENS Raunk. Byfleet, *Druce* in *Rep. B.E.C.*, 580, 1914.

423/6. T. LACISTOPHYLLUM Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 123, 1929.

423/15. T. PALUDOSUM Schlecht. Devil's Punch Bowl, *Beeby* in *Rep. B.E.C.*, 52, 1882.

423/23. T. FAEROENSE Dahlst. Sandhurst, *Druce* in *Rep. B.E.C.*, 121, 1926.

(T. UDUM. I have sent many hundreds of plants to Dr Dahlstedt, and not one of them has he named T. UDUM.)

423/38. T. ALIENUM Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 30, 1926.

423/47. T. CHLOROLEUCUM Dahlst. Barnes, *Miss Todd* in *Rep. B.E.C.*, 295, 1921.

423/49. T. COPIDOPHYLLUM Dahlst. Bradmore Green, *Miss Todd* in *Rep. B.E.C.*, 724, 1923.

423/54(3). T. EXPALLESCENS Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 30, 1926.

423/59. T. GELERTII Raunk. Gt. Burgh, *Miss Todd*; Byfleet, *Druce* in *Rep. B.E.C.*, 295. 1921.

423/64. T. KJELLMANII Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 124, 1929.

423/72. T. LONGISQUAMEUM Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 122, 1926.

423/73. T. MACROLOBUM Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 31, 1926.

423/75. T. MUCRONATUM Lindb. f. Putney Hill, *Fox* in *Rep. B.E.C.*, 122, 1926.

423/78. T. PERLACINIATUM Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 124, 1929.

423/85. T. SUBLACINIOSUM Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 122, 1926.

423/83(2). T. SUBPALLESCENS Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 29, 1929.

423/84(5). T. STENOGLOSSUM Dahlst. Byfleet, *Druce* in *Rep. B.E.C.*, 124, 1929.

Two or three fresh localities may be included from Dahlstedt's recent work.

427/3. SONCHUS ASPER Hill, var. INTEGRIFOLIUS Lej. Newington and Camberwell, *Hb. Du Bois*, c. 1700; Guildford, *Druce* in *Rep. B.E.C.*, 746, 1928.

427/4. S. OLERACEUS L., var. LACERUS Willd. Kew, *J. G. Baker*, *L.B.E.C.*, 8, 1878; Kingswood, *Rep. B.E.C.*, 204, 1926.

435/3. CAMPANULA TRACHELIUM L. The rare, glabrous calyx plant, Holmbury, *Castalia, Countess of Granville* in *Rep. B.E.C.*, 360, 1930.

435/11. C. PYRAMIDALIS L. Alien. Addington, *Griffin* in *Rep. B.E.C.*, 24, 1911.

440/2. Arbutus Andrachne L. Alien. Leith Hill, *Carter* in *Rep. B.E.C.*, 17, 1914.

451/2. Ledum groenlandicum Retz. (latifolium Ait.). Alien. Naturalised in some quantity in a few places at Henley Park where it was shown me by Mr Marks, *Druce* in *Rep. B.E.C.*, 361, 1930.

471/2. Fraxinus Ornus L. Alien. Warlingham, *Beadell* in *Rep. B.E.C.*, 17, 1914.

474/3. Buddleia spectabilis K. & B. Alien. Pyrford, *Lady Davy* in *Rep. B.E.C.*, 446, 1924.

488/2. Phacelia parviflora Pursh. (dubia (L.) Small). Alien. Thames-bank, near Kew, *J. G. Baker* in *Rep. B.E.C.*, 40, 1880.

489/4. Heliotropium curassavicum L. Alien. Mortlake, *B. Reynolds* in *Rep. B.E.C.*, 125, 1926.

496/5. Benthamia (Amsinckia) Menziesii (Lehm.). Limpsfield, *Rev. E. C. Crutwell* in *Rep. B.E.C.*, 738, 1929.

503/4. Pulmonaria Saccharoides Mill. Alien. Ranmore, *Burkill* in *Rep. B.E.C.*, 362, 1930.

506/10. Myosotis versicolor Sm., var. Lloydii (Jord.). Banstead, *C. E. Britton* in *Rep. B.E.C.*, 633, 1928.

509/3. Echium violaceum L. Alien. Thames-bank, near Kew, *J. G. Baker* in *Rep. B.E.C.*, 40, 1880.

509/5. E. italicum L. Alien. Shere, *Lady Victoria Russell* in *Rep. B.E.C.*, 201, 1903.

510/2. Cerinthe minor L. Alien. Guildford, *Clarke* in *Rep. B.E.C.*, 585, 1924.

513/1. Convolvulus arvensis L., var. integrata Dr. Mortlake, *B. Reynolds* in *Rep. B.E.C.*, 31, 1929.

513/3. Cuscuta Epithymum DC., var. albiflora Dr. Caterham, *Richards* in *Rep. B.E.C.*, 311, 1927.

515/8. C. racemosa Mart., var. chiliana Engelm. Alien. Colly Hill, *Rep. B.E.C.*, 422, 1926.

517/1. Solanum Dulcamara L., var. villosissimum Desv. Banstead, *C. E. Britton* in *B.E.C.*, 1054, 1925.

517/7. S. rostratum Dunal. Alien. Warlingham, *Beadell* in *Rep. B.E.C.*, 21, 1923.

524/2. Hyoscyamus albus L. Wandsworth, *Irvine* in *Phyt.*, 1859.

532/29. Linaria canadensis D.-Court. Alien. Thames-bank, near Kew, *J. G. Baker* in *Rep. B.E.C.*, 40, 1880.

535/2. Scrophularia aquatica L., var. pubescens Bréb. Thames-side, Kew, *Drabble* in *Rep. B.E.C.*, 126, 1926.

543/8. Veronica aquatica Bernh. Pyrford, *Druce* in *Rep. B.E.C.*, 313, 1927.

543/18. V. Tournefortii Gmel., var. Corrensiana Lehm. Hook, Ashtead, *C. E. Britton* in *Rep. B.E.C.*, 917, 1928; 531, 1930.

Var. Aschersoniana Lehm. Hindhead, *Rep. B.E.C.*, 314, 1927.

543/19. V. AGRESTIS L., var. GARCKIANA Fourn. Malden, *C. E. Britton* in *Rep. B.E.C.*, 918, 1928.

543/20. V. POLITA Fries is a more correct name than DIDYMA Ten.
Var. THELLUNGIANA Lehm. Ashtead, *C. E. Britton*; Walton-on-the-Hill, *Rep. B.E.C.*, 918, 1928.

The new EUPHRASIAS are not, with one exception, given here. They are in great confusion.

545/14. EUPHRASIA ATROVIOLACEA D. & L. Merrow Downs, *H. E. Fox* in *Rep. B.E.C.*, 411, 1927; teste LUMB.

549/4. MELAMPYRUM VULGATUM Pers., var. DIGITATUM (Beauv.). Farley, Horsley, *H. E. Fox* in *Rep. B.E.C.*, 411, 1927.

552/2. URTICULARIA MAJOR Schmid. Felbridge, *Beeby* in *Rep. B.E.C.*, 94, 1883.

556/2. VERBENA SUPINA L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

558/3. MENTHA LONGIFOLIA Huds., var. PULVERULENTA (Strail). Tadworth, *Lousley* in *Rep. B.E.C.*, 919, 1928.

558/7. M. AQUATICA L., var. MINOR Sole. Holmwood, *Beeby* in *Rep. B.E.C.*, 412, 1927.

558/8. M. HIRCINA (Hull). Holwood, Chiddingfold, *Beeby* in *Rep. B.E.C.*, 133, 1885 (put under PIPERITA on p. 508).

558/12. M. RUBRA (Huds.), var. VARIEGATA (Sole). Barnes, *Fraser* in *Rep. B.E.C.*, 239, 1926.

558/13. M. ARVENSIS L., var. HIRTIPES Fraser. Cooper's Hill, etc., *Fraser* in *Rep. B.E.C.*, 242, 1926.
Var. ALBIFLORA. Walton Bridge, *Fraser*; Cutt Mill, *Lousley* in *Rep. B.E.C.*, 242, 1926.
Var. AUSTRIACA (Jacq.). Mitcham, *Du Bois*, c. 1700; Woking, Virginia Water, *Druce* in *Rep. B.E.C.*, 890, 1925.

561/1. ×THYMUS CELAKOVSKYANUS Schulz. (PULEGIOIDES × SERPYLLUM). Kew, *Rep. B.E.C.*, 238, 1923. Several fresh localities have recently come to hand which are not given here.

566/16. SALVIA VIRIDIS L. Alien. Battersea, *Irvine* in *Phyt.*, 1859.

570/3. DRACOCEPHALUM PARVIFLORUM Nutt. Alien. Byfleet, *Lady Davy* in *Rep. B.E.C.*, 590, 1924; Chilsham, *Rep. B.E.C.*, 73, 1914.

578/1. GALEOPSIS SPECIOSA Mill. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

588/22. PLANTAGO PATAGONICA Jacq. Woking, *Biddiscombe* in *Rep. B.E.C.*, 1921.

600/7. CHENOPODIUM OPULIFOLIUM Schrad. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

600/12. C. FICIFOLIUM Sm. First record, Wandsworth, *Irvine* in *Phyt.*, 1859.

600/21. C. HIRCINUM Schrad., var. DEMINUTUM Ludw. Alien. Byfleet, *Druce* in *Rep. B.E.C.*, 134, 1929.

600/24. C. ZSCHACKEI Murr. Alien. Pyrford, *Druce* in *Rep. B.E.C.*, 134, 1929; Byfleet, *Rep. B.E.C.*, 368, 1921.

613/1. SALSOLA KALI L. Alien. Raynes Park, *C. E. Britton* in *Rep. B.E.C.*, 134, 1929.

615/6. Polygonum scabrum Moench. (Lapathifolium × Persicaria). Wisley, *C. E. Britton* in *Rep. B.E.C.*, 522, 1930.
Var. tomentosum Beck. Whitemoor, *C. E. Britton* in *Rep. B.E.C.*, 522, 1930.

615/9. P. Hydropiper × Persicaria. Brookwood, *C. E. Britton* in *Rep. B.E.C.*, 523, 1930.

615/14. P. microspermum Jord. Mitcham, *A. Bennett* in *Rep. B.E.C.*, 18, 1879.

618/4. Rumex elongatus Guss. Prof. Danser suggests this is wrongly identified, so too is Rumex maximus which is ×R. Weberi.

618/16. R. Acetosella L. First record, Mitcham, *Hb. Du Bois*, c. 1700.

618/29. R. obovatus Danser. Alien. Ham, *Mrs Wedgwood* in *Rep. B.E.C.*, 135, 1929.

635/1. Cannabis sativa L. Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859.

637/3. Urtica Dodartii L. Alien. Kew Bridge, *G. Nicholson* in *Rep. B.E.C.*, 18, 1878.

639/1. Helxine Soleirolii Req. Alien. Haslemere, *Miss Drummond* in *Rep. B.E.C.*, 136, 1929.

646/1. Quercus Robur L. First record, Witham Lane, *Hb. Du Bois*, c. 1700.

650/3. Salix alba × babylonica. Lower Morden, *C. E. Britton* in *Rep. B.E.C.*, 405, 1923. Many Salices remain unnoticed.

669/10. Orchis elodes is not a correct name—it is the true O. maculata L., f. vespertilio Druce, Byfleet, *Rep. B.E.C.*, 20, 1915. Early evidence, Holmbury, *Castalia, Countess of Granville*, 1878, in *Hb. Druce*.

678/6. Crocus zonatus J. Gay. Alien. Shackleford, *F. Clarke* in *Rep. B.E.C.*, 761, 1928.

680/1. Sisyrinchium angustifolium Mill. Chobham, *Thomas* in *Rep. B.E.C.*, 898, 1925.

698/1. Asphodelus fistulosus L. Warlingham, *Beadell* in *Rep. B.E.C.*, 216, 1923.

704/1. Hyacinthus comosus L. Thursley, *F. Clarke* in *Rep. B.E.C.*, 761, 1928.

706/3. Scilla non-scripta H. & L., var. bracteata Dr. Claygate, *H. C. Watson*. Proves constant in culture, *L.B.E.C.*, 14, 1870.

718/16. Juncus macer Gray. (tenuis). Reigate. *Barton* in *Rep. B.E.C.*, 375, 1915; Wisley, *Lousley* in *Rep. B.E.C.*, 389. 1927.

737/17. Potamogeton crispus L., var. serratus (Huds.). Guildford, *Beeby* in *Rep. B.E.C.*, 57, 1883.

746/11. Scirpus setaceus L. Pedicelled spikelets, Pyrford, *Lady Davy* in *Rep. B.E.C.*, 153, 1924.

747/2. Eriophorum angustifolium Roth, var. elatius Koch. Pirbright, *Beeby* in *Rep. B.E.C.*, 58, 1881.

753/4. Carex vesicaria L., forma pendula. Hedge Court, *Beeby* in *Rep. B.E.C.*, 98, 1883.

753/77. C. Vulpinoides Michx. Alien. Thames-bank, near Kew, *Nicholson* in *Rep. B.E.C.*, 40, 1880.

754/8. Panicum Crus-galli L. (submuticum). Alien. Pyrford, *Lady Davy* in *Rep. B.E.C.*, 507, 1926.

754/10. P. sanguinale L., var. ciliare Trin. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

763/2. Sorghum halepense Pers. Alien. Byfleet, *Lady Davy* in *Rep. B.E.C.*, 601, 1924.

765/1. Phalaris minor Retz. and P. paradoxa L. Early evidence, Wandsworth, *Irvine* in *Phyt.*, 1859.

770/1. Alopecurus pratensis L., var. caesius A. Schwarz. West Barnes, *C. E. Britton* in *Rep. B.E.C.*, 633, 1922.

777/1. Phleum pratense L., f. bracteata. Merton, *C. E. Britton* in *Rep. B.E.C.*, 457, 1924.

784/1. Gastridium ventricosum S. & T. The older name. Earliest evidence, *Hb. Du Bois*, c. 1700.

789/1. Aira caryophyllea L., var. major Gaud. (multiculmis). Pyrford, *Druce* in *Rep. B.E.C.*, 221, 1923.

793/1. Trisetum flavescens Beauv., var. variegatum M. & K Horsell, *Biddiscombe* in *Rep. B.E.C.*, 931, 1928.

794/6. Avena strigosa Schreb., var. albida Marq. Alien. Mortlake, *Rep. B.E.C.*, 753, 1922.

796/1. Gaudinia fragilis Beauv. Alien. Byfleet, *Lady Davy* in *Rep. B.E.C.*, 158, 1921.

800/1. Sieglingia decumbens Beauv., var. longigluma Hackel. Byfleet, *Lady Davy* and *Druce*.

824/5. Poa palustris L. (as *serotina*). Alien. Kew and Mortlake, *G. Nicholson* in *Rep. B.E.C.*, 24, 1879.

824/6. P. trivialis L., var. stricta Doell. Epsom, *Rep. B.E C.*, 1070, 1925.

826/ (2). Festuca sulcata Hackel. Possibly native in heathy ground, Byfleet, *Druce* in *Rep. B.E.C.*, 323, 1927. First as British. Various grades have been given it. On the standard of the *Flora* it may be kept distinct.

826/7. F. rubra L., var. barbata (Hack.). Wimbeldon, *Fox* in *Rep. B.E.C.*, 142, 1926.

827/19. Bromus britannicus Williams. (B. hordeaceus, var. pseudoracemosus Dr.). Betchworth, 1867, *Warren* in *Rep. B.E.C.*, 42, 1929.

827/24. B. scoparius L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

827/27. B. squarrosus L., var. villosus (as *patulus*). Alien. Mitcham, *Rep. B.E.C.*, 323, 1927.

829/2. Lolium temulentum L. Early record, *Hb. Du Bois*, c. 1700.

830/11. Aegilops (Triticum) ovata L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

844/7. EQUISETUM OCCIDENTALE Hy. This is the *E. hyemale* from the Ridgway where I discovered it. It may possibly have been introduced with French Roses. See *Rep. B.E.C.*, 244, 1929. It is the only known British station.

849/1. BLECHNUM SPICANT With., var. BIFIDUM Wollaston. Leith Hill, *C. E. Britton* in *Rep. B.E.C.*, 1039, 1923.

The Genus LASTREA is retained instead of DRYOPTERIS.

872/2. NITELLA OPACA Ag. (as *syncarpa*). Ashtead, *Groves* in *L.B.E.C.*, 11, 1877.

876/17. CHARA DELICATULA Ag. Warborough, *Comber* in *Rep. B.E.C.*, 598, 1916.

The British plants omitted in the *Flora* are *Fumaria purpurea*, *Bursa rubella*, other Bursae 6, Violae 7, *Erodium commixtum*, Rubi 20, *Valerianella eriocarpa*, *Hieracium pellucidum*, *Carduus eu-crispus*, Dandelions 17, *Euphrasia atroviolacea*, *Mentha hircina*, *Festuca sulcata*, *Bromus britannicus* probably, and *Chara delicatula*, besides 59 varieties.

The foregoing list gives 132 additional aliens with 4 varieties.

Earlier records are also given in 25 cases.

Several omissions of course are the result of the book being so long in the press.

ROSES IN ANGUS.

Margaret Corstorphine.

The flora of the county of Angus naturally falls into the flora of the seacoast, the lowland straths, the subalpine glens and the mountains. In all these areas, with the exception of the mountains, roses are plentiful but the relative abundance or rarity of the various species varies considerably in each. Our most abundant species are *R. Afzeliana*, *R. coriifolia*, *R. villosa* and *R. Sherardi*, and the British species which do not occur as natives are *R. arvensis* (?), *R. stylosa*, *R. obtusifolia*, *R. micrantha*, [*R. elliptica*] and *R. agrestis*.

GENERAL DISTRIBUTION.

R. spinosissima L. is common along the coast. It is frequent on the grassy tops of the cliffs from Montrose to Arbroath and on the sandy dunes from Arbroath to Dundee. Tending to low growth all along the coast, it becomes quite dwarf on the dunes, forming here and there large patches of the dune carpet which are particularly conspicuous in June because of the beauty of its large white flowers. Inland, although widely distributed, one finds generally only isolated bushes, often growing to a height of 7 to 8 feet. When it grows so luxuriantly it has generally fewer spines and a tendency to larger leaves. It is infrequent in the highland glens, occurring in Glen Clova at 500 feet.

R. canina L. and R. dumetorum Thuill. are not abundant in Angus. They are most frequent on the coast, occur occasionally in the lowland straths, and are altogether absent from the subalpine and alpine areas.

R. Afzeliana Fr. and R. coriifolia Fr., on the contrary, are least frequent along the coast, very abundant in the lowland straths and gradually give place to *R. villosa* and *R. Sherardi* in the highland glens.

The groups *Subcaninae* and *Subcollinae* are very much more plentiful than *R. canina* and *R. dumetorum* but not so abundant as *R. Afzeliana* and *R. coriifolia*. Their distribution is very much the same as the distribution of *Afzeliana* and *coriifolia* and is quite consistent with the suggestion made by J. R. Matthews (" Hybridism and Classification in the Genus Rosa," *New Phyt.*, 1920, p. 165) that possibly they may be hybrids of these species—*subcanina*, connecting, as it does, *canina* and *Afzeliana*; and *subcollina*, combining so many of the features of *dumetorum* and *coriifolia*.

R. villosa L. is our commonest rose (usually as var. *mollis* and its forms). Like *R. Afzeliana* and *R. coriifolia*, it is not frequent on the immediate coast line. It ascends higher than these species, is abundant in the highland glens, and, on the mountains, one finds it occasionally on a grassy ledge or by the side of a hill burn. In Glen Esk it occurs at 1600 feet, and in Glen Clova at 2200 feet.

R. SHERARDI Davies follows very closely the distribution of *R. villosa* and is very nearly as abundant.

R. TOMENTOSA Sm. is very rare: in fact, it is very doubtful if typical *tomentosa* occurs in Angus. I sent several gatherings to Col. Wolley-Dod from bushes which seemed to me neither typical *Sherardi* nor typical *tomentosa*, but he also was doubtful under which they should come.

R. HURSTIANA Harrison in *Vasc.*, xvi., No. 4, November 1930, p. 145 (8), is a new species lying between *R. Sherardi* and *R. tomentosa*. Professor Harrison has gathered it at Tealing and he informs me he has never seen the type *tomentosa* in the county and, in his opinion, it does not grow there.

R. RUBIGINOSA is plentiful along the coast, frequent and widely spread in the lowlands, but only reaches the fringe of the subalpine area. It was formerly regarded as doubtfully native in Scotland. Professor Trail in his "Additions and Corrections to the Topographical Botany of Scotland" (*Ann. Scot. Nat. Hist.*, 1906, p. 38) says:—"In N.E. Scotland this frequently appears entitled to be regarded as native, if one may judge by habitats. It has long been a favourite, and has often been planted, even in early times; and its seeds are readily dispersed by birds. It is, therefore, often regarded as very doubtfully 'indigenous' in Scotland; but the evidence now obtainable can warrant only the verdict 'not proven'." Col. Wolley-Dod in *Rev. Brit. Roses*, p. 93, says:—"There can be no question as to its nativity in Scotland, which has been called in doubt." It is one of our very common roses and what adds to the evidence for its claim to nativity in Angus is the fact that, although frequent and very widely distributed all over the county, it is more common on the seacoast—all along the tops of the rocky stretch of cliffs from Montrose to Arbroath and on the sandy dunes from Arbroath to Dundee, where there has at no time been much human habitation. Gardiner says, in his *Flora of Forfarshire*, "not common." It is therefore, probable that it may have spread greatly in late years. The sweet briar still smells sweet but it has undoubtedly lost much of its old-time fragrance when, to be in its vicinity, meant to be conscious of it. The scent is now often hardly more perceptible than that of *R. Sherardi*, var. *resinosoides*. One wonders how that can be accounted for.

DISTRIBUTION.

R. ARVENSIS Huds.

Near Dun's Bridge, *Mr A. Croall*, *Gard. Fl. Forf.*; cliffs at Buckie Den, Lunan Bay, *Mrs Blair Imrie*.

Var. *ovata* Lejeune.

Lane near Idvies, Letham.

Although native in Scotland as far north as Stirling, *R. arvensis* is very doubtfully native in Angus. Mrs Blair Imrie's record from the cliffs would seem to indicate that it was indigenous. Unfortunately, however, the specimen was destroyed and although the station has been repeatedly searched, the bush has never been refound. Var. *ovata* (Lej.)

Desv. grows in some profusion in the lane at Letham but may be an escape from the gardens at Idvies which are near by.

Recorded for Scotland as native from Edinburgh, Linlithgow, and Stirling; and as doubtfully native from many other Scottish counties as far north as Kincardine and the banks of the Dee at Abergeldie

R. STYLOSA Desv. (agg.).
Var. *systyla* (Bast.) Baker.

G. Don (under *R. collina*) in " Account of the Native Plants in the County of Forfar " in Headrick's *General View of the Agriculture of the County of Angus or Forfarshire.* No locality is mentioned. Watson (*Top. Bot.*) records it as insufficiently vouched, as are all the other Scottish records. It seems very improbable that it is a native of Scotland.

R. SPINOSISSIMA L. (agg.).

Plentiful along the coast and extending to a good elevation on the mountains, *Gard. Fl. Forf.*

Recorded for Scotland from 35 v.-cs.

Var. *typica* W.-Dod.

Banks by the coast at the mouth of the N. Esk, plentiful; cliffs near Lunan Bay; banks of the Monikie burn between Carnoustie and Muirdrum; near Barry; roadside between Wester Bonhard and Kelly Moor; roadside between Tannadice and Finavon.

Recorded for Scotland from Roxburgh, E. and Mid Perth and Easterness.

Forma *pimpinellifolia* W.-Dod.

Roadside near North Water Bridge, Montrose; cliffs near West Mains of Ethie, Auchmithie, and Seaton Den; dunes, frequent, between Elliot and Broughty Ferry; dens of Heughhead, Pitairlie, Ballumbie, Crombie, Elliot and Rottenraw; near Craigend; Letham, Glasterlaw, Finavon, Glen Clova, etc.

Many authors use the name of *R. pimpinellifolia* L. for the aggregate species but Col. Wolley-Dod makes *R. spinosissima* L. the aggregate as it is the older name and as there is some doubt as to the exact plant intended by Linnaeus. See " Roses of Britain," p. 16. Forma *pimpinellifolia* is much more frequent than the type but it is often difficult to decide under which form a plant should come as so many of the bushes have some of the peduncles glandular and others smooth, showing how one form passes into the other.

Recorded for Scotland from Wigtown and Ayr.

R. RUBELLA Sm.

Col. Wolley-Dod has seen a specimen from Angus—no locality. He considers the status of *R. rubella* is somewhat doubtful and thinks it probable that it is one of the very numerous hybrids of *spinosissima* and *villosa*.

Recorded for Scotland from Linlithgow, Perth and (S. Aberdeen).

×R. Sabini (Woods) W.-Dod. *R. nivalis* Donn Hort. Cant., ed. 8, p. 170. *R. Doniana* Woods.

On a rock on one of the mountains at the head of Clora [Clova] near the limits of perpetual snow (hence his name *nivalis*), G. Don, *Baker Mon. Brit. Roses*, p. 205. Under *R. Sabini* Woods, Mountains of Clova, *G. Don. Hook. Fl. Scot.*, p. 155. This, with the var. *Doniana* Woods, is frequent in the mountain valleys, *Gard. Fl. Forf.* Under *R. involuta* Sm. a colony consisting of eleven distinct clumps, a short distance from Muirdrum (!), *W. Barclay* in *Ann. Scot. Nat. Hist.*, 1899, p. 118. Several bushes by banks of Elliot above Arbirlot; roadside near Restennet.

Don regarded *Doniana* as distinct from *Sabini*. It is described by Baker as more densely hairy than *Sabini*, with calyx tube and fruit densely prickly, and sepals hardly, if at all, pinnate. Col. Wolley-Dod, however, now includes it under *Sabini* as he thinks that neither the descriptions nor the authentic specimens indicate any substantial difference (*Roses of Britain*, p. 23).

Regarding Don's discovery of *R. Sabini* in Clova, Rev. E. S. Marshall (*Journ. Bot.*, 1895, p. 45) says that in July 1888, when descending from the tableland above Craig Rennet into Glen Fiagh, he noticed a short distance down the cliffs a rose which he supposed at the time to be *R. pimpinellifolia*. He, however, omitted to take specimens or make a proper examination but he said he had little doubt that this was Don's station, if not the very same bush. The elevation must have been at least 2500 feet, probably more. It is possible the bush may still be there. I have been repeatedly on these rocks and have not seen it, but it is a large area.

It is difficult to understand Gardiner's record, as *R. Sabini* is certainly not now "frequent in the mountain valleys" or elsewhere in Angus.

The hybrid roses recorded by Barclay under *R. involuta* Sm. are still there in plenty. I sent several gatherings of them to Col. Wolley-Dod, who places one group under ×*R. Sabini* Woods and another he considers comes nearest to ×*R. perthensis* Rouy. Their exact parentage is difficult to ascertain. *Mollis* and *Sherardi* both grow near. Barclay thought in one case the second parent might be a white-flowered *mollis* but he said he had been unable to form any definite opinion except in the case of one clump which he believed to be *spinosissima* × *tomentosa*. He used *tomentosa* as an aggregate, including *Sherardi*.

Recorded for Scotland from Selkirk, Haddington, Edinburgh, Linlithgow, W., Mid and E. Perth, N. Aberdeen, Banff, Easterness, Clyde Isles, E. Ross and E. Sutherland.

×R. Wilsoni (Borr.) W.-Dod. *R. involuta*, var. *Wilsoni* Baker. *R. hibernica*, var. *cordifolia* Baker.

Cuthlie Den, several bushes; Den of Elliot between Arbroath and the Guynd, several bushes. Col. Wolley-Dod says that one of the latter group very closely resembles the Menai Straits plant even to its purple foliage.

Recorded for Scotland from Haddington.

? ×R. PERTHENSIS Rouy. ×R. BARCLAYI W.-Dod nón Traaen.

Near Muirdrum, *W. Barclay*: see under ×*R. Sabini*. This group comes nearest to ×*R. perthensis* but they are considerably off type. They certainly have not the hooked spines and excessive clothing of Barclay's Auchterarder plant but they are very near Rouy's description of *perthensis*.

Recorded from Scotland from Mid Perth.

R. CANINA L.

Var. *lutetiana* (Lem.) Baker.

Pitscandly Hill (!), *Arbroath Fl.*; coast between Invergowrie and Dundee; Ninewells and Magdalen Green, Dundee; near Monifieth.

Recorded for Scotland from Mid Perth.

Var. *sphaerica* (Gren.) Dum.

Magdalen Green and Ninewells, Dundee; coast east of Dundee; Barry; cliffs near Castlesea Bay; near Montrose.

Recorded for Scotland from (Kirkcudbright), Roxburgh and Mid Perth.

? Var. *senticosa* (Ach.) Baker.

Magdalen Green, Dundee.

Col. Wolley-Dod is uncertain of this determination and would not establish it as a record. He has never seen it north of the Tweed.

Var. *spuria* Pug. Var. *insignis* W.-Dod.

Mouth of the N. Esk, Montrose.

Recorded from Scotland from Roxburgh.

Var. *rhynchocarpa* (Rip.) Rouy.

Pitscandly Hill. Col. Wolley-Dod is doubtful about letting this determination pass as there is some slight excess of hispidity in the styles.

No other Scottish record.

Var. *globularis* (Franch.) Dum. *R. montivaga* Déség.

Coast near Dundee; banks of the Isla at Ruthven Bridge; Pitscandly Hill.

Recorded for Scotland from W. and E. Perth.

Var. *ramosissima* Rouy. Var. *curticola* W.-Dod non Pug.

Ninewells, Dundee.

No other Scottish record.

? Var. *dumalis* (Bechst.) Dum.

Pitscandly Hill, *Arbroath Fl.* (?); Magdalen Green and Ninewells, Dundee; Castlesea Bay; cliffs near Auchmithie.

The above records are queried by Col. Wolley-Dod as he thinks them not quite typical and as *dumalis* is rare in Scotland.

Recorded for Scotland from Peebles and Easterness.

Forma *viridicata* (Pug.) Rouy.

Coast east of Dundee; Magdalen Green; near Auchmithie.

Var. *biserrata* (Mér.) Baker.

Forma *sphaeroidea* (Rip.) W.-Dod.

Castlesea Bay; Ninewells, Dundee.

Keller names the latter var. *sylvularum* (Rip.) but Col. Wolley-Dod considers the leaflets much too large for that.

No other Scottish record.

Var. *verticillacantha* (Mér.) Baker.

Pitscandly Hill, *Arbroath Fl.*; wood near Letham. In the wood there are several bushes of this rose of which Col. Wolley-Dod saw a specimen. He allows this determination but says that it might equally well be a *subcanina* form and thinks it more probable in this latitude. As, however, *R. canina* grows in the wood and the bush has not the appearance of a *subcanina* form, I have left it under *verticillacantha*.

Recorded for Scotland from Dumbarton and E. Ross (?).

Var. *Schottiana* Ser.

Wood near Letham.

No other Scottish record.

R. DUMETORUM Thuill.

Invercarrity, *C. Lyall, Esq.*, of Kinnordy, *Hook. Fl. Scot.*, p. 158.

Var. *typica* W.-Dod.

Forma *urbica* (Lem.) W.-Dod.

Ninewells, Dundee.

Recorded for Scotland from Elgin and Peebles.

Forma *semiglabra* (Rip.) W.-Dod.

Magdalen Green and Ninewells, Dundee, several bushes; by the side of Forfar Loch; quarry near Forfar.

As the leaflets are pubescent only on the midribs beneath Keller makes this *R. canina*, var. *hispidula*.

Recorded for Scotland from Selkirk and Orkney.

Var. *ramealis* (Pug.) W.-Dod.

Banks of the Isla at Ruthven bridge. This has the glabrous styles of var. *obscura* (Pug.): see W.-Dod *Rev. Brit. Roses*, p. 45.

No other Scottish record.

Var. *platyphylla* (Rau) W.-Dod.

Plentiful round Loch Fithie. The very woolly styles make it f. *puberula* Braun.

No other Scottish record.

Var. *sphaerocarpa* (Pug.) W.-Dod.
Magdalen Green, Dundee.
No other Scottish record.

Forma *spinetorum* (Déség. et Osan.) W.-Dod.
Ninewells, Dundee.
No other Scottish record.

Var. *hemitricha* (Rip.) W.-Dod.

Fieldside by the Loch of Rescobie, very strongly biserrate form; Henghhead Den. There are a number of bushes in the den. Amongst them is a curious form with very elliptical leaflets and also a very strongly biserrate form which comes very near the *obtusifolia*-form *sclerophylla* (Sch.), but the lateral appendages of the sepals are too narrow for that and *obtusifolia* is not known from Scotland.

Recorded from Selkirk, Lanark (?) and Stirling.

R. Afzeliana Fr. R. glauca Vill.
Var. *Reuteri* (God.) W.-Dod.

Not frequent, Auldbar; Ruthven; Montrose; Muirdrum, etc.

Recorded for Scotland from Dumfries, Peebles, Roxburgh, Mid Perth, Elgin, Easterness, Westerness, W. Ross and Orkney.

Var. *glaucophylla* (Winch) W.-Dod. *R. canina*, var. *subcristata* Baker. *R. complicata* Gren.

Common and widely distributed throughout the county. Many of the bushes have glands on the midrib bringing them near f. *myriodonta* and one on Pitscandly Hill has a few subfoliar glands making it towards *stephanocarpa*. Near Auchmithie a form occurs with considerable glandular scabridity on the backs of the sepals which Keller calls var. *glandulicalix* R. K. in sched. (var. rara).

Recorded for Scotland for Peebles, Selkirk, Fife, Berwick, Mid and E. Perth, Elgin, Easterness, Westerness, West Ross, and Orkney.

Forma *myriodonta* Chr. (under *R. Reuteri*).

Frequent. Banks of S. Esk at Kinnaird and mouth of Pow Burn; Muirdrum; Heughhead Den; Pitscandly Hill; Dunninald; Lintrathen; Craigisla, etc.

Recorded for Scotland from Roxburgh, Mid Perth, Easterness, E. Ross and Orkney.

Forma *adenophora* Gren. (under *R. Reuteri*).

Banks of Melgund at Kinnaird bridge; banks of Isla near Ruthven bridge.

Recorded for Scotland from Peebles, Roxburgh, Berwick, Mid Perth, Elgin, Argyle and Orkney.

Forma *stephanocarpa* (Déség. et Rip.) W.-Dod.
Auchmithie.
Recorded for Scotland from Roxburgh and Mid Perth.

GROUP SUBCANINAE.

Var. *subcanina* Chr. (under *R. Reuteri*).

Pitscandly Hill; Glen Prosen; Forest Muir; near Kingoldrum; Pitairlie Den. Col. Wolley-Dod queries this last determination as the barren shoots are more biserrate than the fruiting ones, and considers it might be *denticulata* f. *subcomplicata*.

Recorded for Scotland from Peebles, Berwick, Mid Perth, Easterness and Orkney.

Var. *denticulata* (R. Kell.) W.-Dod.

Frequent, Pitscandly Hill; Turin Hill; Finavon Hill; roadside near Guthrie; laneside, Loch Fithie; Dunnichen; Monikie Burn at Muirdrum; banks of S. Esk near Brechin and Melgund; Lintrathen; Carcston; wood near Idvies, Letham. There are several bushes in the wood, one of which Keller names var. *serrata*.

Recorded for Scotland from Wigtown, Peebles, Edinburgh, Mid Perth, Argyle, East Ross and Orkney.

Forma *subcomplicata* (Hayek) W.-Dod.

Pitscandly Hill; Balgownie Muir; Finavon Hill; R. Isla above Reekie Linn; R. Melgum at Kinnaird bridge. The last is var. *diodus* R. Kell., which Col. Wolley-Dod includes under *subcomplicata*.

Recorded for Scotland from Wigtown, Selkirk, Stirling, S. Aberdeen, Easterness (?) and Orkney.

Var. *pseudo-Haberiana* (R. Vill.) W.-Dod.

Not infrequent. Inverquharity; near Guthrie; Letham; roadside near Auldallan; between Balintore and Lintrathen and near the Loch of Lintrathen; hedgebank near Alyth; Ruthven; Turin Hill; Kilry. Keller puts the last two under var. *Kummeri* Kell., the Kilry gathering under f. *proxima* Kell.

Recorded for Scotland from Orkney.

Var. *glandulifera* (R. Kell.) W.-Dod.

Heughhead Den.

No other Scottish record.

Var. *Briqueti* (R. Kell.) W.-Dod. See "Rev. British Roses Additions," p. 105.

Turin Hill.

No other Scottish record.

R. CORIIFOLIA Fr.

Var. *typica* Chr. *R. canina* var. *coriifolia* Baker. *R. coriifolia* Déség.

Justinhaugh; near Rescobie; Clocksbriggs; roadside near Restennet (untypically small both in fruit and leaflets).

Christ's type, with quite simply serrate leaflets, is rare, though found in six v.-cs.; the nearest to it is f. *frutetorum*, under which most of the bushes must come.

Recorded for Scotland from Selkirk, Roxburgh, Stirling, Mid and E. Perth.

Forma *frutetorum* (Bess.) W.-Dod non Chr.

One of our commonest forms of *R. coriifolia* and widely distributed.

Recorded for Scotland from Selkirk, Mid Perth, S. Aberdeen and Westerness.

Var. *subglabra* R. K.

Forma *subovata* (Rouy) R. K.

Round Loch Fithie there are many bushes of a form with almost simply serrate leaflets glabrous above and markedly ovoid fruit which probably come under the above form but the name has not yet been adopted.

Var. *Watsoni* (Baker) W.-Dod.

Near Loch Fithie, frequent; near Inverquharity, frequent.

Recorded for Scotland from Mid Perth, Wigtown, Renfrew, Peebles, Roxburgh, Easterness and W. Ross.

Forma *subhispida* W.-Dod.

Auldbar; Parkford; Justinhaugh; Dunnichen; Letham; Idvies; Inverquharity; Balgownie Muir; Ennie Den, Glamis, etc.

This is a common form in the county. Many of the bushes are of a subglabrous type.

Recorded for Scotland from Renfrew, Mid Perth, Elgin (?), Easterness, and Argyle (?).

Var. *Bakeri* (Déség.) W.-Dod.

Inverquharity; Kirriemuir; Craigisla; Kilry; Lintrathen.

Recorded for Scotland from Roxburgh, Berwick, Mid Perth, Easterness, E. Ross and E. Sutherland.

Forma *setigera* W.-Dod.

Roadside, Kirriemuir; banks of R. Isla at Ruthven bridge; roadside, Alyth.

Recorded for Scotland from Mid Perth, S. and N. Aberdeen, Elgin, Easterness, Dumbarton, and E. Ross.

Forma *cryptopoda* (Baker) W.-Dod.

Milldens, near Auldbar; Lintrathen—not typical.

Some of the *Lintoni* records for Scotland may be this form: see *Rev. Brit. Roses*, p. 64.

Recorded for Scotland from Easterness.

GROUP SUBCOLLINAE.

Var. *subcollina* Chr.

Inverquharity; Justinhaugh; North Water Bridge, Montrose; banks of the Isla above Reekie Linn; banks of the Melgum near Lintrathen and at Kinnaird bridge; roadside near Den of Airlie; wood near Letham.

Forms occur on the banks of Loch Fithie and at the mouth of the Pow Burn with more pubescent leaflets and ovoid fruit thus approaching var. *bellavallis* (Pug.) but that name has not yet been adopted. Keller determines them as *subcollina* var. *dimorphocarpa* (Borb. et Br.).

Recorded for Scotland from Mid and E. Perth, N. Aberdeen, Elgin, Westerness, and Argyll (?).

Var. *caesia* (Sm.) W.-Dod. *R. tomentosa* var. *incana* Woods.

G. Don, without locality, in an "Account of the Native Plants in the County of Angus" in *Headr. Agric. Forf.*; Justinhaugh; this is nearest to var. *caesia*, but not quite typical.

Baker (*Mon.*, pp. 231 and 233) differentiates var. *caesia* (Sm.) from *R. tomentosa* var. *incana* Woods, putting Don's plant under the latter and the Taynuilt plant, drawn for *Eng. Bot*, under the former.

Recorded for Scotland from Mid Perth, Elgin (?), Argyll (?).

Var. *subcoriifolia* (Barclay) W.-Dod.

Round Loch Fithie, Restennet and Reswallie; banks of the S. Esk at Netherton; Pitscandly Hill; Clocksbriggs. The last two come under var. *incana* but the name is now merged in *subcoriifolia* as there is little difference except in the less pyriform shape of the fruit.

Recorded for Scotland from Wigtown (?), Roxburgh (?), W. and Mid Perth, S. Aberdeen, Easterness, and E. and W. Sutherland.

Another form grows in considerable quantity in a lane near Reswallie. See *Rev. Brit. Roses*, p. 67. It has large, dark coloured, broadly oval leaflets, very densely covered with sub-foliar glands and remarkably strongly compoundly serrate petioles, densely pubescent, very short peduncles and broadly ovoid fruit. Neither Col. Wolley-Dod nor Keller has seen a similar form.

Var. *Lintoni* Schentz.

Eunie Den; banks of the Isla below the Reekie Linn; North Muir, Kirriemuir; Reswallie.

Recorded for Scotland from Roxburgh, Mid and E. Perth, Kincardine (?), S. Aberdeen, Easterness and W. Ross. Some of the v.-c. records may come under *cryptopoda*; see *Rev. Brit. Roses*, p. 64.

On the banks of Loch Fithie there are several bushes of a form of the *Subcollinae* with fully biserrate leaflets very glandular below for which no name has yet been given.

A var. of the *Subcollinae* with hispid peduncles, representing a group not hitherto found in Britain, occurs in a wood near Letham—Keller thinks it nearest to his var. *pastoralis*. See *Rev. Brit. Roses*, p. 69.

A strange form, which probably belongs to the *Subcollinae*, occurs at Auldallan. The peduncles are much longer than those of the *Subcollinae* group. It is too pubescent for var. *subcollina* Chr. and it is completely unarmed. It is an unknown form to Col. Wolley-Dod. Keller thinks that, in spite of the long peduncles, it belongs to the *Subcollinae* but he has never seen a similar form.

R. VILLOSA L.

Var. *pomifera* (Herrm.) Desv. *R. recondita* Pug. non Ley.

By the Melgum near Kinnaird bridge; lane side at Clocksbriggs.

Recorded for Scotland from Roxburgh, Lanark (?), Mid Perth, Kincardine, Argyll (?) and E. Ross.

Forma *lagenoides* (Favr.).

Wood near Letham. This form, with elongate ellipsoid fruit, is very plentiful in the wood. The bushes are tall—8 to 10 feet high—with thick, tree-like trunks and very long spreading branches.

Recorded for Scotland from Fife.

Var. *pomifera* is evidently native in Angus. It is not frequent but where it does occur is in places where it is unlikely to have been an escape from cultivation. Above Carlochy, Glen Esk, at about 1600 feet, there is a bush which is probably var. *mollis* f. *glandulosa* but it has markedly *pomifera*-like leaves and might be a mountain form of *pomifera*.

Var. *mollis* Sm. *R. mollissima* Fr.

Under *R. villosa* L. occasionally along the coast and extending far up the Highland valleys, *Gard. Fl. Forf.*; above Braedownie, at the entrance to Glen Doll, both white and pink-flowered. *Rev. E. S. Marshall* in *Journ. Bot.*, 1889, p. 231.

Var. *mollis* is abundant everywhere except on the seacoast and ascends to about 2200 feet on the mountains.

Recorded for Scotland from 33 v.-cs.

Forma *typica* W.-Dod.

Common. Very small leafletted forms are not infrequent.

Recorded for Scotland from Dumfries, Kirkcudbright, Ayr, Selkirk, Roxburgh, Berwick, Edinburgh, Stirling, Elgin and Argyll.

Forma *glandulosa* W.-Dod.

Under var. *pseudo-rubiginosa*, Pitscandly Hill, *Arbroath Fl.* Common. A form with remarkably ovoid fruit occurs near Melgund Castle and at Magdalen Green, Dundee.

Recorded for Scotland from Peebles, Selkirk, Roxburgh, Berwick, Haddington, Fife, W., Mid and E. Perth, S. and N. Aberdeen, Elgin, E. Ross and Orkney.

Forma *caerulea* W.-Dod.

Common.

Recorded for Scotland from Kirkcudbright, Wigtown, Renfrew, Selkirk, Berwick, Edinburgh, Fife, W., Mid, and E. Perth, S. and N. Aberdeen, Inverness, Argyll, W. Sutherland and Orkney.

R. SHERARDI Davies (agg.).

Common everywhere, reaching the tops of the highland glens and occasionally on the mountains.

Var. *typica* W.-Dod. *R. subglobosa* Sm.

Rescobie; Restennet; Clocksbriggs; Turin Hill; Craigmill Den; Elliot Den and above Arbirlot; between Carnoustie and Muirdrum; Glen Prosen. These all come nearest to Smith's *subglobosa* but not all are quite typical. Some of them are almost unarmed.

A form growing near Restennet with smaller fruit, longer leaves and shorter pedicels than the type is var. *dysadenophylla* Schwersche. but to avoid a new name Col. Wolley-Dod puts this as a small form of var. *typica.*

Recorded for Scotland from Kirkcudbright, Roxburgh, Mid and E. Perth, Kincardine, Argyll and Orkney.

Var. *omissa* (Déség.).

Forfarshire, frequent, *Rev. Augustin Ley* in *Journ. Bot.*, 1907, p. 205; Eunie Den, Glamis; Balgownie Muir; Inverquharity; Den of Fullerton; Den of Airlie; Clocksbriggs; Edzell; Forest Muir, Arbirlot; Finavon Hill; Pitscandly Hill; banks of Esk between Blaikie Mill and Broomknowe; Den of Gardyne; Craigmill Den; Elliot Den; Glen Prosen; Glen Clova, etc.

Many of the bushes of var. *omissa* vary considerably from Déséglise's description. The peduncles are often longer and the fruit is quite as often subglobose as pyriform. Almost unarmed bushes are not uncommon as at Inverquharity, Eunie Den, etc., and in some cases they are quite unarmed, as at Forest Muir.

Recorded for Scotland from Kirkcudbright, Roxburgh (Renfrew. Stirling), Fife, Mid and E. Perth, Easterness, E. Ross, W. Sutherland. and (the Hebrides).

Forma *resinosoides* (Crép.).

Forfar, *Rev. Augustin Ley* in *Journ. Bot.*, 1907, p. 205. A frequent form. Finavon Hill; Loch Fithie; Arbirlot; Craigmill Den; Monikie Burn; North Water Bridge, Montrose; Buckie Den; laneside, Loch Fithie; Melgund Castle (with very long fruit).

Recorded for Scotland from (Dumfries), Kirkcudbright, (Wigtown). Peebles, Selkirk (?), Roxburgh, (Fife), (W.), Mid and E. Perth, S. Aberdeen, E. and W. Inverness, Clyde Isles (?), E. Ross, (Argyll).

Var. *Woodsiana* W.-Dod. *R. tomentosa* var. *Woodsiana* Groves.

Den of Airlie.

Recorded for Scotland from Mid Perth and W. Ross.

Var. *suberecta* (Ley).

Under *R. mollissima* Willd., var. *suberecta*, Forfar, *Dr Druce* in a "List of Scottish Plants" (*Ann. Scot. Nat. Hist.*, 1911, p. 166); roadside near Arbirlot.

Recorded for Scotland from (Wigtown, Renfrew), Peebles, Selkirk, (Roxburgh, Berwick), (W.), Mid and (E.) Perth, S. Aberdeen, (Elgin), E. and (W.) Inverness, Argyll, W. and E. Ross, (N. Ebudes) and W. Sutherland.

Var. *collivaga* Cott.

Glen Prosen road, near Cortachy. The long obovoid fruit brings this under var. *collivaga*, a name which Col. Wolley-Dod now means to adopt.

No other Scottish record.

R. Hurstiana Harrison in *Vasc.*, xvi., No. 4, November 1930, p. 145 (8).

Tealing, *Dr Heslop Harrison.*

Dr Heslop Harrison, having had *R. Hurstiana* under observation for several years, during which time he transplanted several specimens to his garden, has come to the definite conclusion that it is a new British species and places it between *R. Sherardi* Davies and *R. tomentosa* Sm. For comparisons of the three species see *Rep. B.E.C.*, 1930, p. 263, where Dr Harrison gives the contrasting features. See also *Rev. Brit. Roses*, p. 85.

Recorded for Scotland from Berwick, Haddington, Perth and Clyde Isles.

? R. tomentosa Sm.

Without locality, G. Don in an " Account of Native Plants in the County of Forfar " in *Headr. Agric. Forf.*; frequent throughout the county, *Gard. Fl. Forf.*; under *R. mollissima* Willd., Glen Clova, *Druce* in *Bot. Soc. Rec. Club Rep.*, 1881-82, p. 90. These records all refer to the aggregate *tomentosa* which formerly included *Sherardi*.

? Var. *typica* W.-Dod.

Clocksbriggs; roadside near Shansie; near the Guynd; Pitscandly Hill.

Recorded for Scotland from Berwick, Mid and E. Perth, Forfar, Clyde Isles, N. Ebudes (?), and E. Ross.

? Forma *eglandulosa* W.-Dod.

Banks of Monikie burn, near Muirdrum.

Recorded for Scotland from Renfrew (?), Clyde Isles, and E. Ross (?).

? Var. *pseudo-cuspidata* (Crép.) Rouy.

R. Isla above Reekie Linn; S. Esk near Melgund.

Recorded for Scotland from Kirkcudbright, Renfrew (?), Peebles, Mid Perth, N. Aberdeen, and Easterness.

? Forma *cuspidatoides* (Crép.) W.-Dod.

Glen Clova in several places.

Recorded for Scotland from Edinburgh, Fife, Mid Perth, Easterness, and E. Ross.

? Var. *scabriuscula* Sm.

Without locality, G. Don in an " Account of Native Plants in the County of Angus " in *Headr. Agric. Forf.*

Recorded for Scotland from Peebles.

?×*R. tomentosa* Sm.

A rose at the head of Glen Clova is determined by Keller as a *tomentosa* hybrid. He is uncertain of the second parent.

I have listed the above records of *tomentosa* forms as Keller has definitely determined them as such and Col. Wolley-Dod also but with some doubt. I am, however, unconvinced that they belong to the *Tomentosae*; although untypical they seem to me much nearer *Sherardi* forms.

R. RUBIGINOSA L. (agg.).

Var. *typica* W.-Dod. *R. apricorum* Rip. *R. comosa* Rip.

Under *R. rubiginosa* L., not common, but occurs in various places rather plentifully, as on the beach at Ninewells, Invergowrie Bay. It is frequent in the hedgerows near Drumsturdy Moor and in hedges in various other places, as at Glamis, etc.; on the Sands of Barry near Monifieth. Wayside near Upper Mills of Kinaber and near Marten's Den, *Mr A. Croall*; between Meigle and Alyth and in the Carse of Gowrie, *Gard. Fl. Forf.* West of Arbroath, not common, *Arbroath Fl.* Common and widely spread everywhere in the lowlands but most frequent on the seacoast. It is evidently very much more plentiful now than it used to be, as both Gardiner and *Arbroath Fl.* (1892) say "not common." Var. *apricorum* Rip., with subglobose fruit and less erect and more deciduous sepals, is not now differentiated. It is not infrequent, occurring at Bridge of Dun, Montrose Basin, and mouth of N. Esk at North Water Bridge, etc.

Recorded for Scotland from 18 v.-cs.

Forma *Corstorphinae* Druce.

Near Dunninald, *G. C. Druce*; Eunie Den; Lintrathen, etc. Occurs here and there but not frequent.

Recorded for Scotland from Mid Perth, Elgin, and E. and W. Ross.

Var. *echinocarpa* (Rip.) Gren.

Cliffs near Boddin.

Recorded for Scotland from Mid Perth (?).

ALIENS.

R. rugosa Thumb.

Wood near Kirkbuddo and roadside in same district.

R. virginiana Mill. *R. lucida* Ehrh.

Clova, near Hotel, noted there by botanists for over 60 years; Braedownie; roadside between Glamis and Kirriemuir (!), *Mrs Wedgwood*; hedgebank at Memus. The Clova bushes are evidently of two forms (possibly of two species). One is an early flowering form with leaves which turn a brilliant red in early autumn. The other form, with shorter and less tapering leaves, flowers much later and the leaves remain green until they fall in the late autumn.

I have noted the other Scottish vice-counties in which these roses have been found merely to give an idea of the distribution in Scotland, but undoubtedly most of them are much more widely distributed. Col. Wolley-Dod kindly gave me his list of the Scottish records. He does not corroborate those which are bracketted.

I am very greatly indebted to Col. Wolley-Dod for examining and determining my doubtful specimens.

THE NATURALISED AND ALIEN ASTERS OF THE BRITISH PLANT LIST, ED. II.

Descriptions Compiled by C. E. Britton.

It is especially to three genera of the Compositae that the gardens in autumn owe their brilliant colouring. *Aster*, *Chrysanthemum* and *Helianthus* are then in their prime and, to the first-named genus, is due the blaze of purples, reds, blues, lavenders, and whites of the stouter-growing kinds, or the quiet grace of the small-flowered species. Valued, however, as the various kinds of *Aster* are, there frequently comes a time when the plants become a source of embarrassment owing to their strong vegetative increase by the underground parts, with the result that growing rootstocks find their way with garden refuse to waste places, ditches, etc., where, if there is no violent change in the character of the locality, there is every likelihood of the Asters securing a foothold and flourishing. Asters are so widely grown that there is probably no county in the British Isles where Asters have not become naturalised from gardens. Although the sources of origin of these plants are fairly obvious in most cases, yet, when the plants are seen growing on the banks of rivers and streams, as they frequently are, the methods of introduction are less apparent and the observer may be tempted to conclude that seed-dispersal by air and water currents is responsible for the presence of the plants. Once established, they hold their positions tenaciously. Writing in *Journ. Bot.*, 1870, the late W. P. Hiern recorded *Aster Novi-Belgii* as naturalised on the banks of the River Thames, near Richmond, and Barnes, in Surrey At a later date, Mr James Britten (*l.c.*, 83, 1882), when recording *A. paniculatus* Lam., wrote—" This species appears to be the species most thoroughly established in England. In the Nat. Herb. at South Kensington are specimens from Surrey (from near Thrimble Bridge, Thames Ditton, September, 1865 . . . . and from the Barnes and Richmond localities on the banks of the Thames, recorded by Mr Hiern in *Journ. Bot.*, viii., 8, 1870) under the name of *A. Novi-Belgii*." Mr Britten gave Prof. Asa Gray as the authority for the identity of the species mentioned by him and expressed the opinion that, " to an inexperienced eye, the specimens placed under *A. paniculatus* by Prof. Gray are somewhat dissimilar from each other." Probably there was good ground for this opinion as both *A. Novi-Belgii* and *A. paniculatus*, as well as other species, still occur by the Thames, and I may add that *A. paniculatus* was seen by me in September 1931, growing by the Wrythe stream at Winter's Bridge, Thames Ditton, which may, perhaps, be the " Thrimble Bridge " of H. C. Watson.

During the autumn of 1920 the banks of the Thames above Putney were well-worked in quest of Asters, which were found to be well established at intervals in the course of the eight-mile stretch towards Kingston. The plants collected were later submitted to Prof. Thellung by Dr Druce (see *Rep. B.E.C.*, 384, 1921). The situation of the Asters by the Thames is rather curious, as they mostly grow rooted between the granite sets covering the river banks. As Asters were still plentiful there in 1931, there is presumptive evidence that they have flourished on the Thames banks for more that sixty years.

The *British Plant List*, ed. ii., gives the names of eighteen alien species of Aster that have hitherto been detected and, of this number, four species are shown as being completely naturalised. Botanical authors in Britain seem reluctant to admit into their works descriptions of wild plants that have entered into the native flora by way of cultivation. Not so, however, Continental authors, and in many well-known European floras are descriptions of naturalised species that are in no way inferior to the descriptions of the indigenous species. This practice, is, I think, commendable. The plants exist and there is no real reason why they should be ignored or given curt attention.

All the alien Asters of the *British Plant List* have been introduced into cultivation from the northern part of the American continent, where species of the genus abound. Coming from a temperate climate, they find themselves very much at home in Britain and, given the opportunity, find little difficulty in maintaining their ground against indigenous species.

As adequate descriptions of the naturalised and other alien Asters do not occur in the national floras, the following descriptions have been compiled in the hope that they may prove useful. A few words of warning are perhaps necessary. The species are by no means easy to discriminate—some grade into each other; other forms appear to be of hybrid origin: a few are not known as indigenous plants even in N. America and, again, culture has no doubt considerably modified certain forms. Added to these difficulties is the involved synonymy. "Aster," wrote Asa Gray, a botanist who had an unequalled knowledge of these plants, "is far the most difficult of our genera, both for the settlement of the names of the species and for their limitations, in respect of which little satisfaction has been attained as the result of prolonged and repeated studies."

The localities given are all taken from the Reports of the Botanical Society and Exchange Club, and an attempt has been made to furnish a key to the species, but this should be regarded primarily as an index to the descriptions of the species. The following are the species of the *British Plant List*—*salignus*, *paniculatus*, *longifolius*, *Novi-Belgii*, *macrophyllus*, *lanceolatus*, *Tradescanti*, *laevis*, *puniceus*, *laevigatus*, *versicolor*, *carneus*, *novae-angliae*, *prenanthoides*, *ericoides*, *junceus*, *vimineus* and *ascendens*. Descriptions have been included of a few species found wild on the Continent but not recorded so far from Britain.

KEY TO THE SPECIES DESCRIBED.

A.

Not fleshy. Basal and lower cauline leaves wholly or, in part, with slender petioles and lamina cordate.

1. Plant glandular .... *macrophyllus*.
2. Plant eglandular .... *cordifolius*.

B.

Not fleshy. Basal and lower cauline leaves sessile or with broadly-winged petioles, lamina not cordate; upper stem-leaves wholly or partly with more or less cordate or auricled amplexicaul base.

1. Plant hispid 2
   Plant glabrous, glabrescent or pubescent 3
2. Glandular .... *novae-angliae*.
   Eglandular .... *puniceus*.
3. Leaves linear .... *junceus*.
   Leaves ovate, lanceolate or linear-lanceolate 4
4. Leaves wholly or, in part, with lamina contracted at base into a broadly-winged petiole 5
   Leaves with lamina not contracted into a broadly-winged petiole 6
5. Stems slender, flexuose .... *prenanthoides*.
   Stems stout, rigid .... *laevis*.
6. Phyllaries arranged in two series .... *longifolius*.
   Phyllaries arranged in more than two series 7
7. Phyllaries closely imbricate .... *versicolor*.
   Phyllaries not closely imbricate; the outer spreading 8
8. Leaves all entire .... *ascendens*.
   Leaves more or less serrate .... *Novi-Belgii*.

C.

Not fleshy. Leaves sessile or petioled, scarcely or, not at all, amplexicaul.

1. Lower leaves petioled .... *patulus*.
   All leaves sessile 2
2. Leaves obtuse .... *dumosus*.
   Leaves acute or acuminate 3
3. Branches horizontal or spreading 4
   Branches erect or ascending 5
4. Phyllaries acute .... *vimineus*.
   Phyllaries abruptly subulate-acute .... *ericoides*.
5. Phyllaries herbaceous at the apex and on the outer surface 6
   Phyllaries not herbaceous at the apex .... *salignus*.
6. Pericline about 4 mm. in height; outer phyllaries one-quarter to one-third as long as inner phyllaries .... *Tradescanti*.
   Pericline 5-6 mm. in height; outer phylaries one-third to one-half as long as inner phyllaries .... *paniculatus*.

D.

Fleshy. Leaves narrow entire .... *tenuifolius*.

A. MACROPHYLLUS L. Sp. Pl., ed. ii., 2, 1232.

Basal leaves forming large tufts. Stems stout angled, reddish, reaching 1 m. Leaves rather thick, serrate, the lower broadly ovate or reniform-cordate, reaching as much as 25 cm. in length; upper leaves ovate to oblong, petiole often dilated; uppermost sessile, at times with broad bases. Inflorescence strigose and glandular, broadly corymbose, irregular. Pericline about 12 mm., viscid pubescent, phyllaries conspicuously green-tipped. Ligules 10 to 15, white or suffused with purple.

A woodland species extending from Canada to Georgia. Rather variable, appearing to pass into the smaller-headed *A. corymbosus*, and, in another direction, into *A. mirabilis* Torr. & Gray.

I know of one record only, viz., Renfrew, where it is said to be well-established. On the Continent it occurs naturalised in Bavaria, etc.

A. CORDIFOLIUS L. Sp. Pl., 875.

Green, subglabrous, or pubescent; stems paniculately branched; lower leaves membranous, acutely serrate, cordate-ovate, petioled, asperous, more or less pubescent, upper lanceolate, sessile, acuminate. Capitula very small, arranged in thyrsoid inflorescences; pericline 4-6 mm. in height. Ligules 10 to 12, pale purple or whitish.

A native of woods from New Brunswick to Georgia, extending west to Wisconsin and Missouri.

Not hitherto recorded as an alien in Britain, but known on the Continent as an escape.

A. NOVAE-ANGLIAE L. Sp. Pl., 875.

Stems robust, strict, attaining 2.5 m., very leafy, hirsute, or hispid with multicellular hairs, and with glandular pubescence. Leaves broadly linear or lanceolate, entire, sometimes narrowed below, semi-amplexicaul, base auriculate-cordate. Capitula clustered at the ends of branches, heads 2-5 cm. broad, ligules about 50, 1.2 cm. in length, violet-purple, rarely pink, or white. A very distinct species, one of the most beautiful of the genus, and found wild from Canada to the Southern States.

Recorded from Oxon, Bucks, Middlesex, Glamorgan, Carmarthen, Roxburgh, Argyll.

A. PATULUS Lam. Encyc., 1, 308.

Glabrous or slightly pubescent, stems low-growing or reaching 1-5 m., laxly branched. Leaves ovate or oblong-lanceolate, sharply serrate in the middle, acuminate, tapering at the base, the lower stem-leaves with winged petioles, the upper stem-leaves not auriculate. Capitula laxly panicled, heads about 2.5 cm. broad, phyllaries linear to linear-lanceolate, acuminate, loosely imbricate in 3-4 rows, the outer shorter. Ligules violet or purple varying to white.

A wild plant of Canada, New Brunswick, and the Eastern States, but better known as a garden plant.

Not recorded as an escape in Britain, and on the Continent known as an established species by the Rhine, etc.

A. PUNICEUS L. Sp. Pl., 875.

Stems firm, 1-2.1 m., loosely branched, red or purple, hispid, with spreading bristles arising from rigid bases. Leaves oblong-lanceolate, 3-15 cm., acuminate, coarsely and irregularly serrate to entire or denticulate, narrowed or not to the subcordate amplexicaul base, scabrous on the upper surface, often hispid on the midrib below. Capitula panicled or thyrsoid, phyllaries linear, thin, herbaceous, sometimes provided with additional more leafy bracts. Ligules 20-40, 10-12 mm. in length, showy, violet-purple or white.

A well-marked species, exhaling an odour similar to that of juniper berries when bruised.

Distributed as a wild plant from Nova Scotia and Canada to Dakota, N. Carolina, and Georgia. Several notable varieties.

Has been reported at Berwick, Dundee, and banks of the Tay at Perth.

A. LAEVIS L. Sp. Pl., 876.

Stems stout, rigid, reaching 1.5 m. Leaves ovate, oblong to lanceolate, 10-12 cm., becoming smaller; upper leaves sessile, base auriculate or subcordate, the lower leaves narrowed into a winged petiole. Capitula in a thyrsoid panicle, branches short and rigid; pericline campanulate or turbinate, phyllaries rigid, appressed, in several series, coriaceous, whitish, apices green, deltoid or rhomboid. Ligules 20-30, broad, light-blue or violet.

Native to Canada, New Mexico, Rocky Mountains, etc.

Berks. Naturalised by Lough Neagh, Tyrone.

Var. *Geyeri* Gray is a much smaller plant with pericline broader, the phyllaries not coriaceous, lax, attenuate, the green apices less-marked. Recorded from N. Somerset.

A. JUNCEUS Ait. Hort. Kew., iii., 204.

A slender plant reaching a height of about 1 m. Stems glabrous or glabrescent. Leaves linear, 8-12 cm. in length and about 7 mm. in width, sessile by a broad clasping often subcordate base, entire, or lower leaves denticulate. Heads paniculate, rather distant, phyllaries linear, erect, thin, imbricated in 2 or 3 rows, the outer series shorter. Ligules purple, violet or white.

Inhabits wet meadows, etc., throughout the United States and reaching Hudson's Bay, etc.

Is closely related to *A. longifolius* Lam.

Recorded from Oxfordshire by Dr Druce.

A. ADSCENDENS Lindl. in DC. Prod., v., 231.

Glabrescent or strigose, rigid. Stems reaching .6 m., ascending or erect, branched paniculately or subcorymbosely. Leaves firm, coriaceous, linear, spathulate or lanceolate, entire, margin ciliate and scabrous. Heads not numerous, about 2.5 cm. in diameter, phyllaries in 3-5 series, somewhat unequal, oblong-linear or spathulate, the green apices glabrous or puberulent. Ligules violet or purple, about 10 mm. long.

Well distributed in Canada and the States, reaching the upper regions of the Rocky Mountains.

Recorded as an outcast at Cardiff.

A. Novi-Belgii L. Sp. Pl., 877.

Of medium stature, rarely tall, glabrous, or with lines of pubescence on the branches. Leaves lanceolate, oblong-lanceolate, or linear-lanceolate, firm, often somewhat fleshy, entire or slightly serrate, glabrous, acuminate, narrowed, sessile, more or less clasping at the base, 5-15 cm. long, 1-2 cm. wide. Heads corymbose-paniculate, usually numerous, 2-3 cm. in diameter; ligules bright blue-violet.

Extremely variable both in the field and in cultivation. Some forms grown in gardens can scarcely be matched with wild prototypes.

Well spread in Eastern Canada and the eastern and south-eastern States.

A. Novi-Belgii L. is more frequently seen as an established species than any other member of the genus; and has been recorded from more than thirty counties in Britain.

Under the Linnean *A. Novi-Belgii*, Thellung placed *A. laevigatus* Lam. and *A. floribundus* Willd. as sub-species, distinguishing the forms in the following terms.

Sub-sp. *A. eu-Novi-Belgii* Thell.

Inflorescence corymbose-paniculate, the lowest branches elongated, ascending, many-headed; leaves lanceolate to oblong. Heads comparatively large, 2.5-4 cm. broad. Pericline exceeding 6 mm. high, phyllaries usually unequal, erect, about 1 mm. broad.

Sub-sp. *A. laevigatus* (Lam.) Thell.

Stem racemosely branched, branches, including the lower, short, spreading, mostly with one or few heads. Heads comparatively large, phyllaries equal. Leaves above the middle sharply serrate, below somewhat panduriform and entire.

Sub-sp. *A. floribundus* (Willd.) Thell.

Stem-leaves narrowly lanceolate; capituli closely corymbose-paniculate, smaller than in preceding, phyllaries narrower, not much more than .5 mm., unequal. Connects *A. Novi-Belgii* with *A. lanceolatus* Willd. (*A. paniculatus* Lam.) and *A. Tradescanti* L.

A. laevigatus has been gathered in Middlesex, Bucks (on the banks of the Thames near Maidenhead) and in Glamorgan, and *A. floribundus* has been noted by the Thames in Surrey!, Essex, Herts, Oxon, and in Orkney.

A. versicolor Willd. Sp. Pl., iii., 2045.

Flowering stem corymbose, leafy. Leaves rather thin, bright green, oblong, ovate-oblong, or lanceolate, scarcely auriculate, the lower sharply serrate. Capitula about 3 cm. broad, pericline campanulate, phyllaries about 6 mm. Ligules about 10 mm. long, white, changing to pale purple, pink, or violet.

Grown in European gardens but hardly known as a wild plant in N. America, and considered by Thellung to be of hybrid origin (? *A. laevis* × *A. Novi-Belgii*).

Recorded from the side of the Thames above Richmond, Surrey!, S. Hants, Leicester, etc.

A. LONGIFOLIUS Lam. Encyc., i., 303.

Glabrous or pubescent. Stems 30-100 cm., paniculately branched; leaves elongate-lanceolate to linear-lanceolate, entire or serrulate, 7-18 cm. long, 5-12 mm. wide, narrowed to each end, at the base usually clasping and cordate. Heads numerous, 2.5 cm. broad, pericline 7-8 mm. high, phyllaries subequal, outer at times herbaceous. Ligules 7-8 mm. long, violet, purple, or white.

A boreal species reaching to the northern United States.

Recorded as completely established in Oxon; in Perth on the banks of the Tay; Merioneth.

A. VIMINEUS Lam. Encyc. 1, 306.

Subglabrous. Stems 1.5 m., slender, leaves linear or linear-lanceolate, entire, or slightly serrate, 8-12 cm. long, 5-7 mm. wide, often reflexed; branches horizontal, heads densely racemose-secund, shortly peduncled, 4-7 mm. broad; phyllaries linear, acute, appressed, in about three rows. Ligules white, sometimes turning purple. Distribution: Canada to the Southern States.

Recorded from Colchester, Essex.

A. DUMOSUS L. Sp. Pl., 873.

Glabrous; stems 40-100 cm. Leaves obtuse, entire, spreading or reflexed, linear, about 7 cm. long and 5 mm. wide, firm, decreasing in size and passing into minute bracts. Pericline campanulate or turbinate, 4-7 mm. in height, phyllaries linear, imbricated, obtuse or subacute, whitish, with oval or oblong green apices. Ligules violet to white, 4 mm. lo̅ng, 15-30 in number.

Woods in Eastern United States, Florida, Texas, Canada.

Not yet recorded as an alien in Britain, but established in various places on the Continent, as in the Rhine Valley.

A. PANICULATUS Lam. Encyc. 1, 306.

Glabrous or pubescent. Stems tall, sometimes reaching as much as 2 m., branching paniculately. Leaves varying from elongate-oblong to linear-lanceolate, usually attenuate-acuminate, narrowed to a sessile or slightly clasping base, 7-15 cm. long, serrate or denticulate, upper entire, thin. Heads numerous, in leafy lax panicles; pericline about 7 mm. in height, phyllaries imbricated in 4-5 rows, linear, apex green, acute or acuminate, the outer at times entirely herbaceous. Ligules 6-8 mm. long, white or pale purple.

A variable species found growing naturally throughout Canada and the United States.

Introduced into English gardens before the middle of the 17th century, and probably the Aster to which the name Michaelmas Daisy was originally applied.

Recorded from Berks and Oxon. Several localities in Surrey! in one spreading on damp bushy heathland.

A. LANCEOLATUS Willd. Sp. Pl., iii., 2050.

This name was used by Thellung and other botanists to designate the species here named *A. paniculatus* Lam. (following American usage).

Plants named *A. lanceolatus* Willd. have been recorded from Oxon, W. Gouceester, and Surrey.

A. TRADESCANTI L. Sp. Pl., 876.

Stems slender, exceeding 1 m., branches numerous; stem-leaves linear-lanceolate or lanceolate, acuminate, narrowed to a sessile base, 7-15 cm. long, 4-8 mm. wide, glabrous or glabrescent, thin. Heads small, 1-1.5 cm. in diameter, numerous, racemose, corymbose or paniculately-arranged, not secund, phyllaries linear, appressed, imbricate in 4-5 series, dorsally green and also at the apex. Ligules numerous, 4-6 mm. long, white, sometimes suffused with purple.

Ranges from Canada to the Southern States. Some of its forms connect with *A. dumosus*, *A. vimineus*, *A. diffusus*, and *A. paniculatus*. Cultivated in English gardens from 1633. Known as a naturalised species in France, Germany, Switzerland, etc.

In Britain recorded from the side of the Thames in Surrey! and from Glamorgan.

A. SALIGNUS Willd. Sp. Pl., iii., 2040.

Rootstock much-branched and creeping. Stems erect, paniculate-corymbose, branches pubescent in four rows. Leaves lanceolate, acuminate at each end, entire or with few serratures, the lowest narrowed into a petiole, the upper sessile, semi-amplexicaul. Capitula numerous, phyllaries linear, acute or acuminate, imbricate, not herbaceous at the apex, the inner membranous-margined. Ligules white, becoming pale purple,

According to Asa Gray, this plant is a form of *A. paniculatus* Lam. and has been naturalised from early times in Hungary and Germany, or it may even be native in those countries. Established in France, Italy, etc.

In Britain naturalised in Wicken Fen, Cambs, where it was observed by Mr W. P. Hiern in 1867. Recorded also from Surrey, Middlesex, Oxon, Cornwall, Roxburgh, Angus, etc.

A. PRENANTHOIDES Mühl. in Willd. Sp. Pl., iii., 2046.

Low-growing, 40-70 cm. in height, subglabrous or pubescent. Stems flexuous, much branched. Leaves thin, elongated, oblong or ovate-lanceolate, prominently serrated at the middle, attenuate acuminate, narrowed below and usually dilated into an auriculate base, minutely scabrous above. Capitula borne on short rigid spreading branches, heads 2.5 cm. or more in diameter, phyllaries imbricate in 3 or 4 rows, linear, acute, green, the outer shorter. Ligules about 1.2 cm. long, pale violet or white.

A native of moist ground in Canada and the eastern States. Recorded from Hants and from the banks of the Tay at Perth.

A. ERICOIDES L. Sp. Pl., 875.

Stems glabrous, villous or hirsute, rigid, 30-90 cm. in height, branches spreading or ascending. Radical leaves oblanceolate and spathulate, slightly serrate, stem-leaves lanceolate or linear, narrowed to each end, 2.5-7.5 cm. long, 3-6 mm. wide, upper rameal leaves subulate. Capitula usually secund, pericline 6 mm. in height, phyllaries abruptly subulate, green-tipped, base coriaceous, imbricate in about 3 rows. Ligules 15-25, white or tinged with rose.

Found as a wild plant in Canada and the States to Florida.

Has many varieties, the best-known being that cultivated in gardens under the name of *A. Reevesii*, which is a stout form with larger heads and ligules.

Recorded as an escape in Oxon, Berwick and Roxburgh.

A. TENUIFOLIUS L. Sp. Pl., 873.

Rootstock slender, stems often flexuose, sparsely leafy, 30-60 cm., paniculately branched above. Stem-leaves fleshy, entire, linear, 5-15 cm. long, 5-7 mm. wide, branch-leaves minute, bract-like, appressed. Heads rater few, pericline turbinate, phyllaries lanceolate-subulate, attenuate, appressed, imbricate in about 5 series. Ligules pale purple or nearly white.

A native of salt marshes of the south-eastern States.

Known as an escape on the Continent, but not hitherto observed under similar conditions in Britain.

A. CARNEUS Nees Syn. Ast., 26.

No description of this has been given as authorities conclude that Nees' species is made up of forms of *A. paniculatus* Lam. and *A. salicifolius* Ait.

SOME PLANTED OR CULTIVATED WILLOWS.

J. Fraser.

Some willows are such a feature in the landscape, but particularly on the banks of rivers and streams, that some collectors are much impressed by them, and a few distribute them. Five of those described below are not British and no descriptions of them are given in British floras. Two imported species have been described by the late Rev. E. F. Linton in his "Monograph of the British Willows," namely, *Salix babylonica* L. and *S. daphnoides* Villars. Three of the hybrids described in this article have *S. babylonica* for one of their parents, and are usually regarded as *S. babylonica* itself, though an examination of the catkins would dispel that idea. The last named is very decidedly spring tender, and I know of no large trees in Britain. The largest tree I have seen was one growing by the side of the big lake in Kew Gardens, and that was destroyed by voles eating away the bark some years ago, and its progeny are not yet as large. Trees in St James' Park, London, are quite small. Other cultivators complain of its tenderness. Its hybrids are hardier and more vigorous trees.

Salix alba L., var. *stenophylla* Fraser, var. nov.—A large, often round-headed tree, with sharply ascending branches, till it gets very old, when the larger branches become more spreading or even drooping a little. Twigs of the current season are more or less densely silky at first, becoming thinly so or subglabrous in the lower parts by September. Leaves linear-lanceolate, attenuate to a fine point, finely serrate or serrulate from the base to near the tip, narrowed gradually to the cuneate base, more or less densely silky above, but glabrous or subglabrous by September, densely silky beneath, becoming thinly hairy or subglabrous and glaucous in the south-east of England, but retaining much of their silkiness in Scotland to the end of September, at least; in length the leaves vary from 5 to 11.5 cm., though 5 to 8 cm. is a more common average in the south of England, and Northern Ireland; width 7-14 mm., the latter on pollarded trees.

J. E. Leefe and Dr F. B. White were under the impression that male trees of *S. alba* had narrow leaves, and that the female had broad leaves, but the latter are common to both sexes. N. J. Andersson's *S. alba*, var. *angustata*, had its leaves for the most part obsoletely serrulate, and silvery on both sides. None of the specimens I have seen conforms to this. On the R. Mole below Esher, 1899, J. Fraser (large tree now dead, but others occur along the valley from Esher to East Molesey, some of them pollards and evidently planted); Lambriggan, Perranzabuloe, Cornwall, 1926, F. Rilstone; Montpelier, Belfast, Northern Ireland, 1924, James W. White; Inveresk, Edinburgh, 1923, George Taylor; Boyndlie and Aberdour Mill, North Aberdeen, 1927, J. Fraser. All the above are in my herbarium. Two are male, one female, and two only leaf-specimens.

S. alba L., var. *britzensis* Späth.—Trees of rapid growth, but not yet of great age. Shoots of the current year rather densely pubescent at the very first, but soon glabrescent, and the lower half glabrous by the middle of September, orange red or brilliant red during autumn and winter. Leaves broadly lanceolate, to narrowly lanceolate, attenuate to a slender point, in some trees short and in others long, finely serrate almost to the tip, cuneate at the base, thinly hairy at first with adpressed hairs on the upper face, soon glabrescent, more or less densely silky on the lower face, but becoming rather thinly hairy by the end of September on the base of the shoots. The length of the leaves varies from 5 to 8.5 cm.; the width in the male is 1.3-2 cm., in the female 8-12 mm. The scales of the catkins in the male are broad and blunt like those of *S. alba*; in the female they are narrowly oblong, obtuse, densely pubescent on the lower half, ciliate, glabrous in the upper half, reaching to the base of the style or to the stigmas during anthesis, similar to those of *S. alba*, var. *vitellina*.

These trees originated in the nursery of Späth, at Berlin, and were listed in Catalogue 57, p. 67 (1883), under the name of *S. vitellina* L., var. *britzensis*. The female shows evidence of this in the long bracts of the catkins, but the bracts of the male are short like those of *S. alba*. Some botanists are of opinion that *S. vitellina* is a form of the hybrid *S. alba* × *fragilis* and, if so, the two forms of bracts in the above trees are explainable. The trees were grown by me from cuttings obtained from Holland House, Kensington, and Westonbirt, Tetbury, Gloucester, and flowered in 1914 and 1918 respectively.

S. alba × *babylonica* = × *S. sepulchralis* Simonkai La, *Novit. ex Fl. Hung.* in Termès Fuzet. xii., p. 157 (1890). A. et E. G. Camus, Mon. de Saules de France, i., p. 234 (1904). A tree 50-75 ft. high, with all the branches decidedly pendulous and descending to a great length on river banks. Branches slender, densely silky at first, soon glabrescent, and the lower parts glabrous by the middle of July. Leaves lanceolate, much attenuated at the apex with a slender point, more or less falcate, cuneate at the base, finely and acutely serrate, with incurved serratures, densely silky at first on both sides, but becoming ± thinly so during the season, till nearly glabrous, except on the petioles, but in sheltered places retaining some silkiness till they fall; length 6-14.5 cm., width 1.2-2.5 cm. Catkins up to 3.5 cm. long, slender, seated on peduncles an inch long or less, and furnished with four or five, leafy, entire or finely serrulate bracts; bracteoles or scales ovate, obtuse, ciliate, shorter than the ovary after anthesis. Ovary ovoid, glabrous, sessile or the lower ones very shortly stalked, style short, stigmas entire or bifid.

All the trees I have seen in bloom are female. A. and E. Camus say the trees may be male, female, partly mixed with both sexes and occasionally hermaphrodite. See *S. alba*, var. *vitallina* × *babylonica*. Flowering usually takes place towards the end of March, when the yellow bracts and young leaves are highly ornamental from a distance. The hybrid originated before 1864. Localities are Mitcham Common, 1914, C. E. Britton; Thames banks, Kew, Surrey, Richmond on the Middlesex side. 1926, and Thames banks, Mortlake. 1927, J. Fraser; Woburn, Beds, 1929, A. B. Jackson, and elsewhere. The dates relate to the time of collecting only.

S. alba, var. *vitellina* × *babylonica* = × *S. chrysocoma* Dode, Bulletin Soc. Bot. de France, 1908, p. 655. *S. babylonica*, var. *aurea* Hort. *S. babylonica ramulis aureis* Hort. *S. vitellina*, var. *pendula* Rehd. *S. alba tristis* Gaud. An extremely weeping willow, with very long, slender, drooping branches, and leafy twigs, with a golden yellow bark. It does not seem to rise with a straight, shapely trunk, but should be grafted or budded on a tall stock of *S. alba* or some of its varieties. Twigs thinly hairy at the very first, soon glabrous. Leaves lanceolate, very much attenuate at the slender apex, cuneate at the base, very finely serrate almost to the tip, with acute incurved serratures, very thinly silky on both sides at the very first, soon glabrous except for the uppermost leaf or two, occasionally, or a few short hairs on some of the petioles; length 5-12 cm.; width 1-2 cm. Catkins and leaves contemporaneous. Catkins slender, ascending or spreading, curved, 2.5-5 cm. long, male, female, or the sexes indiscriminately mixed on different trees, occasionally hermaphrodite, with an ovary and stamen side by side in the same flower, seated on a short peduncle, furnished with one to five, entire, leafy bracts; bracteoles or scales lanceolate to oblong, pubescent on the lower half, or shaggy with long hairs that extend beyond the glabrous upper half, pale yellow. Ovary glabrous, style short, stigmas entire or bifid.

The most beautiful and picturesque weeping willow in cultivation. The very mixed sexes on the same and different trees, and the variable hairiness and shape of the scales of the catkins indicate hybridity. The influence of *S. alba*, var. *vitellina*, is seen in the colour of the twigs and branches, and in the size of the larger leaves. The weeping habit of the tree, the slender twigs and branches, the small catkins, small scales and ovaries are due to *S. babylonica*. Many trees have been raised, for not all are exactly alike, and I have heard of one that is spring tender, suggesting the influence of *S. babylonica*. These hybrids could not have come from *S. alba* as suggested by *S. alba*, var. *tristis* Gaud., and adopted by Rehder. They could not have come from *S. alba*, var. *vitellina* (L.), for this has catkins 2-5 in. long. Trees are to be seen at the Royal Horticultural Society's gardens, Wisley, gathered in 1926. Barnes Common, 1926, Thames banks, Twickenham, Middlesex, 1928, J. Fraser; and Westonbirt, Tetbury, Gloucester, 1928, A. B. Jackson.

S. babylonica × *fragilis* = *S. blanda* Anderss., Monographia Salicum, p. 50 (1865). A tree with wide spreading main branches, and drooping branchlets and twigs. Shoots dull green, brownish or subtestaceous, glabrous from the first, polished when one year old. Leaves lanceolate, attenuate at the apex to a fine, oblique or straight point, serrate almost to the tip with subacute serratures, slightly incurved at the tip, cuneate at the base, dark green above, paler and somewhat glaucous beneath, having a few short hairs on both faces at the very first, but soon perfectly glabrous, 7-14 cm. long, 1.5-2.5 cm. broad; stipules one-half cordate, acute, serrate, not always present. Catkins straight or slightly curved, ascending or spreading, but ascending the reverse way on pendent branches, essentially female, but sometimes with male flowers mixed with them, and occasionally hermaphrodite, supported by peduncles 7-17 mm. long, and furnished with one to five, leafy entire bracts, 2.5-3.5 cm. long; bracteoles or scales narrowly ovate to narrowly oblong, obtuse or acute, downy at the base, ciliate, pale yellow. Ovary narrowly ovate, tapered into the style, finely pubescent at the base as in *S. babylonica*; shortly stalked; style short, stigmas emarginate or bifid.

The trees I have seen are as described above, but not very large compared with those of *S. alba* × *babylonica*. The evidence of *S. fragilis* is seen in the large leaves, their glabrous condition, the glabrous shoots, the relatively long bracteoles of the catkins, and the stalked ovaries. The presence of *S. babylonica* is seen in the weeping habit, slender twigs, short catkins and the more regular serratures of the leaves, greatly reduced in size compared with those of *S. fragilis*. Waylands Farm, Hersham, Surrey, 1925; Petersham, Surrey, 1926, J. Fraser.

S. purpurea L. Sp. Pl., 1017 (1753). Sm. Fl. Brit. iii., 1039; S. J. Enander, Studier o'fver Salicis i Linne's Herbarium, p. 31 (1907). A shrub, 3-4 ft. high, decumbent. Twigs sooner or later creeping on the ground for several feet, very slender, glabrous from the first, very tough, red, very bitter to the taste. Leaves oblanceolate-linear, acute, or shortly acuminate, narrowed to a rounded base or cuneate, finely serrulate from near the apex to nearly the base, glaucous beneath, ± pubescent on both faces at first, soon glabrous, 5-7.5 cm. long (average 5-6 cm.), 5-10 mm. broad (average 7 mm.). Stipules very small, seldom produced. Catkins before the leaves in March or April, very slender on a very short peduncle, carrying one to three, small, linear bracts, straight or curved, partly opposite, partly alternate; female 1-2 cm. long during anthesis, lengthening to 3 cm. in fruit; bracteoles or scales obovate, villous at first, becoming densely pubescent with shorter hairs in fruit, black in the upper half; ovary very small, ovoid, obtuse, sessile, grey-tomentose; stigmas very small, round, entire or emarginate, subsessile; male with two stamens completely connate and terminated by a four-lobed anther, reddish before shedding the pollen.

The above is the type in the herbaria of Linnaeus and Smith, and S. J. Enander, late of Uppsala, confirmed it in the herbarium of the first named. I have known the female as a bush and as a budded or grafted, weeping tree since 1874; the bush and trailing form was grown in the garden for tying up the Raspberries with its tough twigs. It is often grown in gardens and nurseries as a weeping standard, under the name of *S. americana*, var. *pendula*. That is why I have introduced it here, as it is seldom seen in Britain, except on the stem of another species. Smith considered it native, and gave King Street meadows, Norwich, as a habitat according to Mr Crowe (1804). I have specimens from Cambridge Botanic Garden, 1926; quarry, Crox Bottom, Bristol, 1925, Ida M. Roper; and male and female specimens from the River Etsch, above Botzen, Italy (formerly part of Austria), 1927, A. H. Maude. I have seen standard trees at Richmond, and Anchor Lock, River Wey Navigation, both in Surrey, and elsewhere.

S. purpurea L., var. *Eugenei* Fraser, var. nov. *S. purpurea* L., var. *C. Helix* Koch, Comment., p. 25. A. and E. G. Camus, i., p. 104 and Atlas, Pl. 7, fig. F. *S. Eugenei* Hort. *S. pyramidalis Josephine* Hort. *S. Rehderiana* Hort., not Schneider. An erect bush, 10 ft. high or more, with the branches slightly spreading at a very acute angle. Twigs slender, though considerably stouter than those of *S. purpurea*, glabrous from the first, polished, pale green in shade, yellow green in exposure. Leaves linear-oblanceolate, cuspidate, acute to shortly acuminate, broadest near the apex, narrowed to the base, cuneate, finely serrulate from near the apex to one or two-thirds downwards, a little revolute at the margin, thinly pubescent at first, soon glabrous, glaucous, 6-10 cm. long, 7-13 mm. wide in good, moist soil, but 3-6 cm. long in dry soil. Stipules not seen. Catkins male, sharply ascending, straight or slightly curved, 2-2.5 cm. long, 6 mm. wide when in bloom. Anthers very pale red, fading before dehiscence. The rest as in the type.

A Continental variety of recent introduction. The leaves are always narrower and more extensively serrulate than those of *S. Helix* Sm., whether they are long or short. It makes a very handsome bush. There are only two British varieties of *S. purpurea*; on the Continent the varieties and forms are numerous. Cult. Kew and first flowered in 1929 from Westonbirt, Tetbury, Gloucester; Hort. Hillier and Sons, 1929.

NOTES ON BRITISH ORCHIDACEAE.

P. M. Hall.

Helleborine Helleborine (L.) Dr. × *purpurata* (Sm.) Dr. Selborne Common, N. Hants, v.-c. 12, August 8, 1931, Colonel M. J. Godfery and P. M. Hall.

In the open woodland above Selborne Hanger, known as The Common, the predominating form of Helleborine is *H. purpurata*. Both *H. Helleborine* (*latifolia*) and *leptochila* occur in The Hanger and the former is also found on the outskirts of The Common. A single plant was found which appeared to be an extremely tall *purpurata* with two stems rising from the rhizome in the manner of that species but abnormally bracteate and large-leaved. Although no flowers were open, Colonel Godfery believed this plant to be a hybrid and subsequently confirmed his opinion in a letter dated August 14, 1931, as follows:—" I am now quite satisfied that the *Epipactis* with broad leaves and a *very* dense spike with extraordinarily developed bracts is a hybrid. The buds on dissection clearly confirmed the evidence of the broad *latifolia*-like leaves. The floor of the hypochile was not *transversely* ridged with violet undulations as in even the topmost buds of *E. violacea* [i.e., *purpurata*—see later, P. M. H.], but was longitudinally veined with close-lying transparent veins and entirely green, with no trace of violet. The epichile showed no trace of the parallel *longitudinal* furrows on the bosses or hunches of *violacea*, slightly suggestive of the fingers of the human hand, but showed indications of an irregular boss on each side, similar to those of *latifolia*. The transverse mottling of the hypochile of *E. violacea* is a marked feature of that species, clearly visible in all the buds I opened, even the least developed. I, therefore, think that the plant is *E. latifolia* × *violacea* = × *Epipactis Schulzei* Camus. Other points about the hybrid were the very stout stem, slightly shallower hypochile and narrower epichile. The 2nd leaf from base was broadly ovate, 5 cm. long × 4 cm. broad, the next 8 cm. × 5 cm., the next 8.5 cm. × 3.5 cm., and the next 8.5 cm. × 2 cm., agreeing generally with *E. latifolia*. Lowest bract 6.5 cm. × 1.2 cm."

As stated above, the general affinity of this plant was with *purpurata* in habit and appearance, and in his analysis Colonel Godfery draws attention to those characters in which the plant differs from *purpurata* (*violacea*) and resembles *Helleborine* (*latifolia*).

This hybrid is quoted by Camus, *Iconographie des Orchidées d'Europe et du bassin Méditerranéen*, ii., p. 486, as × *E. Schulzei* Fournier, *Brév.*, p. 514 (1927) = *E. latifolia* All. × *varians* Fleischm. & Rechinger. According to Camus' synonymy *E. varians* Fleischm. & Rechinger in *O.B.Z.*, lv., p. 267 (1905) = *E. violacea* Boreau, *Fl. Cent.*, éd. 3, ii., p. 651 (1857) = *E. purpurata* Sm., *Eng. Fl.*, iv., p. 41 (1828)

= *Helleborine purpurata* Druce in *Journ. Bot.* (1909), p. 28. This hybrid is recorded by Camus from Switzerland and Germany, but has apparently not been hitherto recorded in the British Isles. If the nomenclature of the *British Plant List* is followed, this hybrid should be cited as × *Helleborine Schulzei* (Fournier) nov. comb.

Helleborine palustris (Mill.) Schrank. Rudley Mill, S. Hants.

H. leptochila (Godfery) Dr. Selborne, N. Hants. Normal plants as well as the peloriate form recorded in 1930.

Orchis incarnata L. Askham Bog, near York; Austwick, West Yorks, v.-c. 64, W. A. Sledge.

Var. *pulchrior* Dr. Thursley Common, near Hammer Pond, Surrey, confirming the identification of J. E. Lousley's dried specimens of 1930; very numerous. Holmsley, Matley, and near Beaulieu Road Station, all New Forest, S. Hants. Austwick Moss, West Yorks, v.-c. 64, W. A. Sledge.

O. praetermissa Dr. *Britty Common, S. Somerset, v.-c. 5, N.C.R. Though technically a new record this plant has in fact been long known in the vice-county to Mr W. D. Miller and other Somerset botanists. Shapwick, N. Somerset. *Mathon, Worcestershire, v.-c. 37, plentiful, N.C.R., F. M. Day.

Var. *pulchella* Dr. Austwick, West Yorks, v.-c. 64, W. A. Sledge.

**O. purpurella* Steph. Kilnsey, West Yorks, v.-c. 64, N.C.R., W. A. Sledge. Submitted to Dr Stephenson, who concurred.

O. maculata L., var. *leucantha* Dr. Whernside, W. Yorks, v.-c. 64, W. A. Sledge.

O. maculata L. × *praetermissa* Dr. Shapwick, N. Somerset.

**O. maculata* L. Askham, near York, and near Austwick, West Yorks, v.-c. 64, N.C.R., W. A. Sledge.

O maculata L. × *praetermissa* Dr., var. *pulchella* Dr. Near Austwick, West Yorks, v.-c. 64, W. A. Sledge.

**O. Fuchsii* Dr. Askham, near York, and near Austwick, West Yorks, v.-c. 64, N.C.R., W. A. Sledge.

O. Fuchsii Dr. × *incarnata* L. Askham, near York, W. A. Sledge.

O. Fuchsii Dr. × *praetermissa* Dr. Mathon, Worcs, F. M. Day.

O Fuchsii Dr. × *praetermissa* Dr., var. *pulchella* Dr. Austwick, West Yorks, v.-c. 64, W. A. Sledge.

O. hircina Crantz. A single specimen in the parish of Exton, S. Hants, F. Escombe.

Habenaria Gymnadenia Dr., var. *densiflora* (Wahl.). Rudley, S. Hants, with type.

H. Gymnadenia Dr. × *O. Fuchsii* Dr. Rudley, S. Hants, 1 plant.

H. Gymnadenia Dr. × *O. praetermissa* Dr. Near Southwick, S. Hants, 3 plants.

All the above were seen by me *in situ* or as fresh specimens. With regard to the N.C.R.s for *O. maculata* L. and *O. Fuchsii* Dr., *O. maculata* L. (agg.) has, of course, been previously recorded for v.-c. 64, but the *Comital Flora* does not record either segregate for that vice-county.

A NEW ALCHEMILLA FOR THE BRITISH ISLES.

F. Jaquet.

Alchemilla controversa Bus. apud Jaquet, *les Alchimilles fribourgeoises* (Mém. Soc. Frib. Sciences Naturelles, i., 1902, p. 128), et Buser, *les Alchimilles du Crêt de Chalam* (Bulletin Soc. Natur. de l'Ain, p. 5).

Description by the Author:—

Species of medium size, vigorous, rather short and squat, coriaceous and flexible, covered with soft down, but not very abundantly, sparse at the top. Rhizome of medium size, breaking easily. Leaves rounded-oblique, coriaceous, remaining flexible, strongly undulate, exterior lobes joining or more often half overlapping above the petiole. Lobes broad, only slightly incised, those of the inferior leaves arcuate, equalling ¼ to ⅓ of the radius; those of the large summer leaves semicircular, ⅓ to 2/5ths of the radius; those of the last leaves widely triangular, toothed all round. Teeth 6-8 on each side, rather large, equal, obliquely ovate or mammiform, strongly ciliate, mucronate, penicillate. Leaves of a dirty bluish-green, pale in colour, the last almost white below. With the exception of the first leaves, which are glabrous, the others have loose hair scattered over almost all the surface. Petioles very robust, those of the large leaves as thick as the stems, covered all over with rather silky hairs. Stems rather vigorous, arcuate, ascending, one to two times as long as the petioles, yellowish, readily turning brown in the sun and sub-pubescent up to the first branch. Inflorescence corymbiform, divaricate at the summit; scorpioid cymes much unrolled, pedicels divergent, flowers therefore pseudo-umbellate, fasciculate. Flowers medium-sized, shortened, of a dirty yellow green, quite glabrous. Urceoles shortly turbinate or sub-spherical. Sepals equalling the urceoles, short and broad, cordate-ovate, obliquely upright or even arcuate-convergent after flowering and hiding the rather exserted styles. Pedicels rather slender, the lateral twice, the superior three times, the length of the urceole. Appears to be rare everywhere.

Habitat. Pastures, grassy slopes of the Haut-Jura and of the calcareous Alps of western Switzerland.—Jura Vaudois: Suchet, Mont-Tendre, Dent de Vaulion (*Gaillard*).—Jura Dubisien: summit of Mont-d'Or.—Alpes; Bas-Valais: vallée de Morgins, going towards the Pas de Chésery.—Vaud: Lavarraz, la Boellaire, towards the col des Essets (*R. Bus.*).—Fribourg: le Haut de Terroche (*Cerniat*); les Grouins (valley of Motélon), amidst abundance of *lineata* (Jaquet).

The whole appearance of the plant, its texture, the shape of the leaves and their denticulation are those of *A. alpestris* Schmidt. I had taken for a more hairy form of that species the first specimens that M. Jaquet sent me. But this acute observer, who has had the advantage of seeing the plant *in situ*, growing side by side with true *alpestris*, pointed out to me certain very definite differences. As a reminder of our controversy I have given the plant the name of *A. controversa*.

The description given above is taken from robust plants from the Jura. Those from the Fribourg and Vaudoises Alps differ slightly. They are quite half the size and are more slender; the stems are more or less decumbent and often glabrous . . . I regard the alpine plant as the slender, badly nourished form (habitat less favourable), the plant from the Jura as f. *vegeta*, *robusta*, of the same type.

(Signed) R. Buser.

Without wishing to question the value of the above, not having seen the plant from the Jura, we should like to state, regarding the Fribourg plant that, at the time of its flowering, the pastures of Terroche are almost always grazed and only occasional small plants escape the teeth of the animals which, as is well known, are very partial to plants of this genus. It was such small plants that were sent to M. Buser.

For several years we have had the pleasure of examining the Alchemillas gathered in the British Isles by our honoured friends, Mr Salmon of Reigate, Dr Druce of the University of Oxford and Mrs Wedgwood, of London. It has enabled us to make a comparative study of the Alchemillas and many interesting forms have been brought to our notice. When examining last autumn the parcel of plants which had been sent from Britain, our attention was particularly struck by a plant we had not hitherto observed. A comparison with our Swiss specimens at once showed, to our great surprise, that it was identical with our *A. controversa*.

Thanks to the very precise information given by Mrs Wedgwood and Dr Druce, to whom belong the credit of its discovery, we are able to give the two stations in which *A. controversa* has been found in the British Isles.

1. In Scotland, near the shores of Loch Lubnaig, Perthshire, growing on quartzose schist, at an altitude of 410 feet, in rough pasture.
2. In Ireland, at Cave Hill, Belfast, Co. Antrim, on soil above basaltic rock, plentiful amongst grass at an altitude of 500 feet.

The question arises as to whether the plant occurs in Switzerland and England without any intermediary localities or if, as is infinitely more probable, it will one day be discovered on, for example, the central Massif of France.

Fribourg, Switzerland, 1st December 1931.

[We are greatly indebted to Col. H. H. Johnston for permission to publish this summary of his fifteenth paper on this subject, and to join with him in thanking Dr Hugo Dahlstedt for his valuable determinations and descriptions.]

ADDITIONS TO THE FLORA OF ORKNEY.

As Recorded in Watson's *Topographical Botany*, Second Edition (1883).

Colonel H. H. Johnston,
C.B., C.B.E., D.Sc., M.D., C.M., F.R.S.E., F.L.S.

So far as I am aware, the seventeen plants mentioned in this paper are new records for H. C. Watson's county No. 111 (Orkney), and they are not mentioned in the following publications: *A Tour through some of the Islands of Orkney and Shetland*, in the year 1804, by Patrick Neill (1806); "Notice of some of the rarer Plants observed in Orkney during the Summer of 1849," by John T. Syme, Esq., published in the *Transactions of the Botanical Society of Edinburgh*, vol. iv., pp. 47-50 (1850); "Florula Orcadensis—A list of plants reported to occur in the Orkney Isles," by H. C. Watson, Esq., F.L.S., published in *The Journal of Botany*, No. xiii., pp. 11-20 (January 1864); Annual Reports of the Botanical Exchange Club of the British Isles; "A new List of the Flowering Plants and Ferns of Orkney," edited by W. A. Irvine Fortescue, and published in *The Scottish Naturalist* (1882-1884); *Supplement to Topographical Botany*, ed. ii., by Arthur Bennett, A.L.S. (1905); and *Flora Orcadensis*, by Magnus Spence, F.E.I.S. (1914).

I am much indebted to the following botanists for kindly determining the names of the specimens of most of the plants mentioned in this paper:—Dr Hugo Dahlstedt; Lieutenant-Colonel A. H. Wolley-Dod; and the late Dr George Claridge Druce.

Class I.—Dicotyledons.

Erophila Boerhaavii (Van Hall) Dumortier, *Flor. Belg.*, p. 120 (1827), var. *decipiens* (Jordan) O. E. Schulz (*fide* George Claridge Druce, who saw six specimens of my Reference No. 3797 on 14th September 1931).—Reference No. 3797, grassy roadside, 135 feet above sea-level, Burn of Wasdale, at the Loch of Wasdale, Firth, Mainland, Orkney, Scotland, 26th May 1928, Henry Halcro Johnston.

Rosa Afzeliana Fries, var. e. *subcanina* (Christ) Wolley-Dod in his "A Revision of the British Roses," in *Supplement to The Journal of Botany*, vol. lxix., p. 105 (December 1931) [=*Rosa glauca* Villars, var. e. *subcanina* (Christ)] (*fide* A. H. Wolley-Dod, who saw all my specimens of Reference Nos. 4377, 4497, 4462, and 4504, on 18th December 1931; and all my specimens of Reference Nos. 4463 and 4505, on 28th December 1931).—(1) Grassy banks at burnside, 20 feet above sea-level, left bank (west side) of the Burn of Grimbister, Firth, Mainland, Orkney, Scotland, Reference No. 4377, 17th July 1931, and Reference No. 4497, 26th September 1931; (2) grassy banks at burnside, 70 feet above sea-level, right bank (south side) of the Kirk Burn, Bu, Hoy, Orkney, Scotland; Reference Nos. 4462 and 4463, 14th August 1931, and Reference Nos. 4504 and 4505, 26th October 1931, H. H. Johnston, native, rare.

Rosa Afzeliana Fries, var. f. *denticulata* (R. Keller) Wolley-Dod, forma *subcomplicata* (Heyek?) Wolley-Dod in his "A Revision of the British Roses," in *Supplement to the Journal of Botany*, vol. lxix., p. 105 (December 1931) [=*Rosa glauca* Villars, var. f. *denticulata* R. Keller, forma *subcomplicata* (Heyek?) Wolley-Dod] (*fide* A. H. Wolley-Dod, who saw all my specimens of Reference Nos. 4382 and 4489 on 18th December 1931).—Grassy banks at burnside, 10 feet above sea-level, right bank (east side) of the Burn of Rossmire, near its mouth, on the upper (south) side of the Kirkwall-Stromness Public Road, Ingshowe, Firth, Mainland, Orkney, Scotland, Reference No. 4382, 24th July 1931, and Reference No. 4489, 26th September 1931, H. H. Johnston.

Sedum album Linn. [=*Sedum album* Linn., var. a. *teretifolium* Haworth] (*fide* George Claridge Druce, who saw living plants of my Reference No. 4379 on 5th August 1931).—Crevices of stone walls of two buildings in ruins near a dwelling-house, 35 feet above sea-level, Nether Bigging, Firth, Mainland, Orkney, Scotland, Reference No. 4379 (plants in flower-bud), 17th July 1931, and Reference No. 4397 (plants in flower-bud and sparingly in flower), 31st July 1931, H. H. Johnston.

Hieracium sagittaticeps Dahlstedt, n. sp. Ab *Hieracium Sinclairii* Dahlstedt, haec species differt pedicellis et ramis inflorescentiae dense stellatis et sparsim glandulosis et pilosis, squamis involucri minus dense pilosis et glandulosis, marginibus squamarum latius et magis conspicue floccosis, apicibus squamarum magis comosis nec non stylis obscuris et foliis minus pilosis.

According to the heads this species agrees very well with *Hieracium sagittatum* Lindeberg except that they are less hairy and glandular. As to the leaves and in its general appearance it comes very near to *Hieracium Sinclairii* Dahlstedt. It belongs to *Vulgata*, a. *Silvaticiformia* Dahlstedt.

Hieracium sagittaticeps Dahlstedt belongs to Zahn's capital or group-species *Hieracium sagittatum* (Lindeberg) Dahlstedt, and in *The London Catalogue of British Plants*, Eleventh Edition (1925), it should be inserted between Nos. 1089 and 1090.

Locality.—Reference No. 4425, heathery banks at burnside, 150 feet above sea-level, Burn of Segal, Hoy, Orkney, Scotland, 8th August 1931, H. H. Johnston.

Hieracium Sinclairii Dahlstedt, n. sp. *Caulis* 2-2.25 dem. altus, 0-1-phyllus basi ipsa longe pilosus caeterum sparse densius pilosus a basi

± leviter superne densius stellatus. *Folia basalia* in rosulam multifolium congesta, exteriora fere rotundata intermedia ovalia omnia ± obtusa, interiora ± et saepe late ovata sparse mucronato-dentata vel ad basin latius et acute dentata, breve acuta, supra sparse—densiuscule subtus praesertim in nervo dorsali dense pilosa ± dense ciliata, in petiolis dense et longe pilosa laete viridia; *folium caulinum* 0-1, lineari-lanceolatum integrum acutum, breve petiolatum. *Inflorescentia* oligo-polycephala ramis ± longis vel medioeribus arcuatis et pedicellis brevibus acladium circa 10 mm. longum ± superantibus sparse superne densius et obscure pilosis, densiuscule—sat dense glandulosis ± stellatis. *Involucrum* parvum ± atroviride, basi ovata. *Squamae* exteriores breves intermedia longiores obtusae—obtusiusculae margine ± stellatae, interiores lineares obtusiusculae margine leviter vel parum stellatae omnes, apice leviter comosae, caeterum ± dense et obscure pilosae, sat dense—dense glandulosae. *Calathium* sat obscure luteum circa 40 mm. diametro, radians. *Stylus* luteus-melleus, stigmatibus extus fuscescentibus.

Hieracium Sinclairii Dahlstedt belongs to a group of species of which *Hieracium sagittatum* Lindeberg is the most prominent. From the latter *Hieracium Sinclairii* Dahlstedt is distinguished through its heads with narrow phyllaries, covered with darker simple hairs and denser glandular hairs but less floccose in the margins. According to the heads it mostly resembles *Hieracium pycnodon* Dahlstedt but differs by their darker and denser hairiness. The leaves are mostly entire, the inner ones only sparsely and shortly dentated at the base, not shortly lobed as in *Hieracium pycnodon* Dahlstedt. *Hieracium Sinclairii* Dahlstedt belongs to Zahn's capital or group-species *Hieracium sagittatum* (Lindeberg) Dahlstedt, and in *The London Catalogue of British Plants*, Eleventh Edition (1925), it should be inserted between Nos. 1097 and 1098.

Locality.—(1) James Sinclair's Reference No. 716, moist mossy soil on sandstone crags on hillside, 430 feet above sea-level, Dwarfie Hamars, Hoy, Orkney, Scotland, 24th July 1931, James Sinclair. (2) Modification (*fide* Hugo Dahlstedt, who saw James Sinclair's seven specimens of his Reference No. 715 at Skärsätra, Lidingö, Sweden, on 8th December 1931). James Sinclair's Reference No. 715, moist mossy clefts of sandstone rocks on crags on hillside, Dwarfie Hamars, Hoy, Orkney, Scotland, 24th July 1931, James Sinclair.

Note.—James Sinclair's specimens of his Reference No. 716 were collected by him at 430 feet above sea-level, near the foot of the crags on the Dwarfie Hamars, south of the Dwarfie Stane; and those of his Reference No. 715 were collected higher up the crags, near the north-east end of the Dwarfie Hamars.

Hieracium paraliaeforme Dahlstedt, n. sp. *Caulis* 3-4 dcm. altus, bifolius inferne crebrius superne parcius pilosus et ± stellatus. *Folia* saturate viridia, *basalia* in rosulam (1)—2-5-foliam congesta ± petiolata, exteriora ± ovalia obtusa, interiora ± ovato-lanceolata—late lanceolata, breve acuta-obtusiuscula, subintegra vel ad basin parce breve et densiuscule dentata, supra parce subtus crebrius pilosa, ± ciliata, in pagina inferiore saepe ± violescentia; *caulina* 2, infimum ovato-lanceolatum acutum (subintegrum) vel infra medium dentibus parcis latis praeditum supra parce subtus praesertim in nervo dorsali crebrius pilosum, breve petiolatum, summum plerumque parvum anguste lanceolatum—lineari-lanceolatum subintegrum vel basi ± denticulatum acutum, sessile. *Inflorescentia* ± contracta oligo-cephala ramis brevibus—sat longis acladium 5-10 (-20) mm. longum ± superantibus, cum pedicellis glandulis ± sparsis et pilis obscuris ± crebre praeditis, sat dense stellatis. *Involucrum* basi-ovato-decurrente. *Squamae* exteriores breves, paucae, intermediae latiores ± lineares, interiorae lineares omnes ± albido-comosae, obtusiusculae, in margine leviter floccosae caeterum, pilis obscuris sat crebis et glandulis parcioribus obtectae. *Calathium* circa 30 mm. diametro, obscure luteum. *Stylus cum stigmatibus* ± fuscus, siccus sat obscurus.

Hieracium paraliaeforme Dahlstedt bears a great resemblance to *Hieracium paralium* Dahlstedt, from Sweden, but it differs from it especially in having more glabrous leaves, that are more or less entire or more broadly dentated below the middle, longer heads with denser hairiness and more prominent stellate hairs in the margins of the phyllaries. It belongs to *Vulgata*, b. *Vulgatiformia* Dahlstedt. *Hieracium paraliaeforme* Dahlstedt belongs to Zahn's capital or group-species *Hieracium levicaule* Jordan, and in *The London Catalogue of British Plants*, Eleventh Edition (1925), it should be inserted between Nos. 1122 and 1123.

Locality.—(1) James Sinclair's Reference No. 717, moist mossy soil on sandstone crags on hillside, 430 feet above sea-level, Dwarfie Hamars, Hoy, Orkney, Scotland, 24th July 1931, James Sinclair. (2) Modification (*fide* Hugo Dahlstedt, who saw my two specimens of my Reference No. 4425A, in full fruit, at Skärsätra, Lidingö, Sweden, on 2nd December 1931). Reference No. 4425A, heathery banks at burnside, 150 feet above sea-level, Burn of Segal, Hoy, Orkney, Scotland, 8th August 1931, H. H. Johnston.

Note.—James Sinclair's specimens of his Reference No. 717 were collected by him at 430 feet above sea-level, near the foot of the crags on the Dwarfie Hamars, south of the Dwarfie Stane, and a short distance north-east of his Reference No. 716 *Hieracium Sinclairii* Dahlstedt.

Hieracium Johnstonii Dahlstedt, n. sp. *Caulis* 6-7 dcm. altus, polyphyllus, fere glaber. *Folia* sat laete viridia, subtus pallidiora, rosularia nulla, *basalia* sub anthesi emarcida; *caulina* plurima, 16-20, supra glabra subtus parce pilifera, margine parce ciliata omnia infimis exceptis sessilia, anguste—sat late ovato-lanceolata ± longe acuta, integra—sparse ad medium denticulata-dentata. *Inflorescentia* corymbosa, polycephala e ramis ex axillis foliorum summorum ortis acuta, ramis pedicellisque ± dense stellatis sparsim—hinc inde crebrius pilosis. *Involucrum* mediocre ± atroviride basi ovata. *Squamae* extimae anguste interiores

lineares densiusculae—obtusae apice leviter vel parum comosae glandulis paucis parvis—minutis et pilis sparsis vel hinc inde crebrioribus obtectae. *Calathium* parvum circa 30 mm. diametro sat obscure luteum. *Stylus cum stigmatibus* luteus vel melleus.

This species, in respect of the more or less ovate acute leaves and all its general appearance, very closely resembles *Hieracium crocatum* Fries. Regarding the form of the heads, the more linear obtuse phyllaries and their hairiness, it comes very near *Hieracium polycomum* Dahlstedt. In reality it is intermediate between these two above-mentioned species. It belongs to *Foliosa* Dahlstedt. *Hieracium Johnstonii* Dahlstedt belongs to Zahn's capital or group-species *Hieracium inuloides* Tausch, and in *The London Catalogue of British Plants*, Eleventh Edition (1925), it should be inserted between Nos. 1236 and 1237.

Locality.—My Reference No. 4461 and James Sinclair's Reference No. 724, grassy rocky sandstone sea-cliffs, 15 feet above sea-level, on the north side of Pegal Head, North Walls, Hoy, Orkney, Scotland, 13th August 1931, H. H. Johnston and James Sinclair.

The aggregate species *Taraxacum officinale* Wiggers is recorded for Orkney in Watson's *Topographical Botany*, Second Edition, p. 236 (1883), but the following three segregate species are not mentioned in that book.

GROUP VI.—VULGARIA.

Taraxacum sublaciniosum Dahlstedt, var. (*fide* Hugo Dahlstedt, who saw James Sinclair's two dried specimens at Lidingö, Sweden, on 20th November 1931).—James Sinclair's Reference No. 706, grassy banks at seashore, 10 ft. above sea-level, Bu. Hoy, Orkney, Scotland, 13th June 1931, James Sinclair.

Taraxacum sublacticolor Dahlstedt, modification (*fide* Hugo Dahlstedt, who saw my two dried specimens at Lidingö, Sweden, on 20th November 1931).—Reference No. 4323, grassy roadside, 50 feet above sea-level, Mill Burn, Hoy, Orkney, Scotland, 18th May 1931, H. H. Johnston.

Taraxacum privum Dahlstedt, modification (*fide* Hugo Dahlstedt, who saw my one dried specimen at Lidingö, Sweden, on 20th November 1931). —Reference No. 4323A, grassy roadside, 50 feet above sea-level, Mill Burn, Hoy, Orkney, Scotland, 18th May 1931, H. H. Johnston.

Senecio Smithii De Candolle.—(1) James Sinclair's Reference No. 747, grassy banks near the mouth of a burn, Mill Burn, Burnhouse, North Walls, Hoy, Orkney, Scotland, 5th September 1931, James Sinclair; (2) my Reference No. 4482, edge of a grassy poultry yard, 100 feet above sea-level, Pleasance, Stromness Secondary School, Stromness Town, Stromness, Mainland, Orkney, Scotland, 7th September 1931, H. H. Johnston. This alien South American species was first discovered in Orkney by Dr George Claridge Druce, at Mill Burn, Burnhouse, North Walls, Hoy, in August 1931.

Matricaria suaveolens Buchenau [=*Matricaria discoidea* De Candolle].—(1) Reference No. 4481, grassy poultry yard, 100 feet above sea-level, Pleasance, Stromness Secondary School, Stromness Town, Stromness, Mainland, Orkney, Scotland, 7th September 1931, H. H. Johnston; and (2) Reference No. 4500, grassy rubbish heap from Stromness Town, 50 feet above sea-level, Clouster, Stromness, Mainland, Orkney, Scotland, 16th October 1931, H. H Johnston. This alien North American species was first discovered in Orkney by James Sinclair, junior, at Pleasance, Stromness Town, on 3rd September 1931, when he collected his specimen of his Reference No. 744; and he also discovered it at Clouster, Stromness, before I collected my specimens of my Reference No. 4500 there on 16th October 1931.

Veronica agrestis L., var. b. *Garckiana* P. Fourn. (*fide* Charles Edward Britton, who saw specimens of my Reference No. 4065, through Dr George Claridge Druce).—Potato and cabbage plot in a vegetable garden, 30 feet above sea-level, Bellevue House, North End Road, Stromness Town, Stromness, Mainland, Orkney, Scotland. (1) Reference No. 2853, 11th October 1924; and (2) Reference No. 4065, 14th September 1928, H. H. Johnston. See *Rep. B.E.C.*, 1930, vol. ix., part iii., p. 363 (August 1931).

Prunella vulgaris L., var. b. *nemoralis* Beguinot (*fide* George Claridge Druce, who saw my two specimens of Reference No. 4420 on 18th August 1931).—Reference No. 4420, grassy banks at burnside, 15 feet above sea-level, North Burn of Quoys, Hoy, Orkney, Scotland, 6th August 1931, H. H. Johnston.

[*Salix viminalis* L., var. c. *linearifolia* Wimmer (*fide* John Fraser, who saw my specimen of Reference No. 4380 on 17th November 1931).—Reference No. 4380, marshy grassy burnside, 60 feet above sea-level, Burn of Grimbister, Mid Bigging, Firth, Mainland, Orkney, Scotland, 17th July 1931, H. H. Johnston. Not native. Planted by man. Two plants, in leaf but not in flower or fruit, only seen by me.]

CLASS II.—MONOCOTYLEDONS.

Malaxis paludosa Swartz.—Reference No. 4456, heathery sedgy marsh near a burn, 130 feet above sea-level, near the left (north) bank of Lyrawa Burn, about ⅝ mile from the mouth of the burn at Lyrawa Bay, North Walls, Hoy, Orkney, Scotland, 12th August 1931, H. H. Johnston.

A LIST OF PLANTS FROM THE ISLE OF WIGHT.

E. Drabble and J. W. Long.

The present contribution is a mere list of plants observed by us from 1916 to the present date (1931), accompanied here and there by brief notes on some of the more interesting of them. The list makes no pretence to completeness—many large genera are not mentioned—but it seemed to the late Editor better to publish this incomplete list than to wait, perhaps for several years, until justice could be done to the Phanerogamic Flora as a whole.

In general the records of localities run from West to East. No further classification of localities has been attempted here, as in our opinion a classification to be of any value would necessitate a division of the Island on principles very different from those hitherto proposed; even the broad division into Cretaceons and Tertiary areas loses much of its attraction when the petrological character of the rocks with their overlying soils is carefully considered, while mere topographical division is too artificial to be of use to anyone but the mere collector.

It will be noticed that we have added considerably to the records from West Wight, which on the whole make a surprisingly meagre show in Stratton's lists. Most of the collectors whose records he assembled appear to have given by far the greater share of their attention to East Wight. It is unnecessary to mention all previously published lists; among the more important are the following:—Bromfield's "Flora Vectensis," edited by W. J. Hooker and Bell Salter, published in 1856, four years after Dr Bromfield's death. A "Supplement" by A. G. More appeared in the Journal of Botany in 1871. In 1883 F. Townsend's "Flora of Hampshire, including the Isle of Wight," was published, followed at the beginning of the present century (1904) by a second edition by Townsend—an excellent work. In 1909, F. Stratton contributed to the "Guide to the Natural History of the Isle of Wight" a long list, apparently largely a compilation of records made by other collectors many of which had been published previously, although he very rarely mentions the authority for any particular record. A Supplementary list by Stratton was printed in the Journal of Botany in 1913. Since that time occasional short notices have appeared in the Journal of Botany and the Reports of the B.E.C., and some records are given in the Cambridge British Flora; while in 1929, J. F. Rayner brought out a "Supplement" to Townsend's Flora.

In tho following list all the records, except in the very few instances where another collector's name is given, are our own.

We are greatly indebted to Mr J. E. Little, M.A., for sending to us a list of specimens from the Isle of Wight in a Herbarium at Hitchin Priory made by Mrs Fredk. Peter Delmé Radcliffe, nearly one hundred years ago. These records are enclosed in square brackets and quoted throughout as "Herb. Radcliffe, teste J. E. Little."

In general, the sequence and nomenclature of the London Catalogue, Ed. XI., has been followed.

CLEMATIS VITALBA L.—The common plant is var. INTEGRATA DC. with entire leaflets; var. CRENATA (Jord.) with crenate-serrate leaflets occurs much less commonly; var. TIMBALI Drabble with leaflets long and narrowly lanceolate:—Thorley. (See Journ. Bot., 84, 1932). It should be noted that the leaves in the young plant, and of the lower parts of mature plants, are usually toothed in all the varieties.

[We have failed to find THALICTRUM FLAVUM L. in either of its two recorded localities.]

ANEMONE APENNINA L.—Norton; no doubt an escape from cultivation.

RANUNCULUS LENORMANDI F. Schultz—Not common; Newchurch, slopes of Bleak Down.

R. HEDERACEUS L.—Northwood, Compton Bay; var. HOMOIOPHYLLUS (Ten.), a form characterised by its robust stems and large floating leaves:—Sandown.

R. SCELERATUS L.—Not common; Freshwater, Norton, Newport, Ryde, etc.; var. PUBESCENS R. & F. Brading.

R. FLAMMULA L.—The common form (var. SUBERECTUS Syme) abundant; vars. SERRATUS DC., OVATUS Pers. and LATIFOLIUS Wallr. also occur.

R. LINGUA L.—Most of the plants in the marsh at Freshwater Gate are more or less hairy; all have a downy coat when young but this becomes less and less evident as the plants mature, and the fully grown plants may be nearly glabrous. The downy coating, however, differs from plant to plant and even from branch to branch of the same plant. It is therefore unsatisfactory to try to distinguish a. GLABRATUS and b. HIRSUTUS of Wallroth amongst these plants.

R. ACER L.—The commonest variety is MULTIFIDUS DC. (BORAEANUS Jord.); this flowers in spring and early summer. Forma TOMOPHYLLUS (Jord.) generally flowers a little later. Var. STEVENI (Andrz.) is also abundant, flowering chiefly in July and August. Less common is var. FRIESIANUS (Jord.), also a late-flowering plant (See Drabble in *Rep. B.E.C.*, 1930 (1931), p. 472-8).

R. REPENS L., var. ERECTUS DC.—The large upright form without runners:—Freshwater, etc. A small prostrate form occurs on the slip-clay at Cranmore.

R. BULBOSUS L., var. BRACHIATUS (Schleich.). With many spreading stems, up to 48, from the single corm:—Moon's Hill and Newport. On the Downs occur two dwarf forms; (1) f. NANUS Druce, a small upright few-flowered plant, and (2) a small plant with several spreading prostrate stems. In cultivation these retain their distinctness, but approach the corresponding inland forms in size. They should be regarded merely as growth forms of our ordinary BULBOSUS (i.e., R. BULBIFER Jord.) and R. BRACHIATUS Schleich., respectively. The densely-hairy var. VALDEPUBENS (Jord.) also occurs at Freshwater and Totland, and retains its character in cultivation. Near the coast on the south of the Island a form indistinguishable from var. DUNENSIS Druce has been found here and there.

R. SARDOUS Crantz—Not common; Totland, Freshwater, Grange Chine. Newport, Sandown; f. PROSTRATUS Druce (see *Rep. B.E.C.*, 1924 (1925), p. 431, and 1926 (1927), p. 19), Moon's Hill, Norton.

R. PARVIFLORUS L.—Abundant on broken ground on the Downs at Freshwater, Afton, Compton, Calbourne, Apes Down.

R. ARVENSIS L.—Rare; Newport, Whippingham, Bembridge.

R. FICARIA L.—With cream-coloured (not yellow) flowers at Moon's Hill.

HELLEBORUS VIRIDIS L., var. SMITHIANUS A. Br.—Still persisting in the locality at Haven Street mentioned by Stratton; [Totland, April 1838, in Herb. Radcliffe, teste J. E. Little].

AQUILEGIA VULGARIS L.—Very local; in scrub on the Downs near Alum Bay, all with purple flowers, abundant; [Forest near Cowes (c. 1838) in Herb. Radcliffe, teste J. E. Little].

DELPHINIUM AJACIS Reichb. (? GAYANUM Wilmott)—Waste-land by the Medina below Newport.

ACONITUM ANGLICUM Stapf (A. NAPELLUS L., b. LACINIOSUM Seringe of *L.C.*, Ed. xi.)—At Pan Mill till 1918, not seen since that year. A specimen in Herb. Drabble labelled A. NAPELLUS L., Newport, I. of W., July 4th, 1877. H. E. Wilkinson, is A. ANGLICUM.

BERBERIS VULGARIS L.—Very rare; Freshwater. Carisbrooke.

PAPAVER RHOEAS L., var. PRYORII Druce—Brading, Newport; var. VIOLACEUM Bréb.—Moon's Hill; var. CAUDATIFOLIUM (Timb.)—Newport, Freshwater.

P. DUBIUM L.—Not common; Fishbourne, Carisbrooke, Brading.

P. LECOQII Lamotte—Very rare; Newport.

P. ARGEMONE L.—Not common: Headon Hill, Yarmouth, Newchurch; [Tinker's Lane, Cowes, June 1839, in Herb. Radcliffe, teste J. E. Little].

P. HYBRIDUM L.—Rare; Yarmouth, Newport.

GLAUCIUM FLAVUM Crantz—Abundant on the cliffs of the south coast; in an old chalk-pit at foot of Ashley Down, several miles from the sea.

CORYDALIS BULBOSA DC.—Cowes.

C. LUTEA DC.—Abundant on old walls at Gatcombe.

FUMARIA CAPRIOLATA L., var. BABINGTONII Pugsley—Rare, Chilton, Brighstone, Steephill.

MATTHIOLA INCANA Br.—Still on the cliffs between Freshwater and Compton. There are two forms: (1) with petals narrow, oblong, dark purple; (2) with petals broader, obovate, paler. In Stratton's list it is given as "Formerly at Steephill"; it was there in 1925, but the cliff has now fallen (1931).

CHEIRANTHUS CHEIRI L. and var. FRUTICULOSUS (L.)—On cliffs and old walls at Freshwater, Yarmouth and elsewhere.

Nasturtium officinale Br., var. microphyllum Crantz—Compton Bay, Newchurch.

N. sylvestre Br.—Sandown.

Barbarea vulgaris Br., var. transiens Druce—Moon's Hill, Newport and elsewhere. This variety has often been mistaken for *B. intermedia*.

B. verna Asch. (praecox Br.)—Abundant; Freshwater, Norton, Newport, Wooton, etc.; [Cowes, 1838, Herb. Radcliffe, teste J. E. Little].

Cardamine flexuosa With.—Rare; Newport, Newchurch, Binstead.

Erophila Boerhaavii Dum.—Freshwater, Norton, etc.; var. brachycarpa (Jord.)—Freshwater Downs; var. muricola (Jord.)—Freshwater Downs.

Cochlearia danica L.—Abundant and luxuriant at Freshwater Gate and as a minute form in the turf at the edge of the cliffs from Afton to the Needles.

C. anglica L.—High up in the chalk-cliffs at Afton and Freshwater, a most unusual situation for C. anglica. [*C. officinalis* L. recorded in Rayner's "Supplement," as still on Cliffs, Freshwater, 1924, we have entirely failed to find there in that or any subsequent year].

Sisymbrium Thalianum Gay—Highdown, Freshwater, Farringford, Newport.

S. pannonicum Jacq. (altissimum L.)—Newport, Cowes.

S. Columnae Jacq. (orientale L.)—Moon's Hill, Yarmouth, Newport, Cowes, St Helens.

S. Sophia L.—Thorley, Alverstone.

Erysimum cheiranthoides L.—Newport.

E. perfoliatum Crantz (E. orientale Mill., Conringia orientalis (L.) Dum.)—Newport, Shide.

Camelina sativa Crantz—Cowes, Newport, Ryde, Godshill. [The records of *C. foetida* Fr., attributed to J. W. Long in Rayner's "Supplement," are due to the compiler's error. *C. foetida* has not been seen in the Island by either of us].

Brassica arvensis O. Kuntze (sinapistrum Boiss.), var. orientalis (L.), pods retrorsely hispid, abundant; var. Schkuhriana (Reichb.), pods glabrous, strongly torulose; Highdown, Farringford, Newport, Cowes.

Diplotaxis tenuifolia DC.—Rare; Newport, Sandown, Ventnor, St Lawrence.

D. muralis DC.—Alverstone; var. Babingtonii Syme—Newport, Shanklin, Ventnor, Steephill.

Coronopus didymus Sm.—Newport, Ryde.

Lepidium campestre Br.—Cowes, Whippingham, St George's Down, etc.

L. Smithii Hook.—[Cowes, 1837, Herb. Radcliffe, teste J. E. Little].

L. ruderale L.—Ryde.

L. Draba L.—Chilton Chine, Newport, Cowes, Ryde; var. viridescens Druce—Newport.

THLASPI ARVENSE L.—Not common; Freshwater, Newport, Cowes, Sandown, Shanklin.

CRAMBE MARITIMA L.—Very rare; Hamstead (1920).

RAPHANUS RAPHANISTRUM L. and var. FLAVUS Druce—Ventnor.

R. MARITIMUS Sm.—Ventnor, and by the Medina below Newport.

RESEDA ALBA L.—Cowes, Ryde.

R. LUTEOLA L.—Common; var. CRISPATA (Link)—Cliffs at Freshwater; this plant has retained its narrow leaves and crisped margins in cultivation for several years.

HELIANTHEMUM CHAMAECISTUS Mill. (VULGARE Gaertn.)—Abundant on the Downs; also in a damp meadow near the sea at Newtown. A form with pale cream-coloured flowers from Afton Downs has retained its colour unchanged for several years in cultivation, but a plant with very pale yellow flowers from Westover Down reverted after one year to the ordinary form.

VIOLA ODORATA L., var. IMBERBIS (Leight.)—Freshwater, Thorley; a beardless form with puce-coloured flowers near Alum Bay.

V. HIRTA L.—Common; var. PROPERA (Jord.)—Freshwater; var. FOUDRASI (Jord.)—Freshwater Downs, Afton Downs.

V. CALCAREA Gregory—Freshwater Downs, Apes Down.

V. PALUSTRIS L.—Newchurch.

V. SILVESTRIS Lamk.—Moon's Hill, Bouldnor, Cranmore, Wooton, Apes Down, Alverstone.

V. RIVINIANA Reichb.—Common; var. DIVERSA Greg.—Farringford; var. VICINA (Martr.-Don.)—Wooton; var. FLAVICORNIS (Forster)—Freshwater and Afton Downs, Newchurch.

V. CANINA L.—Headon Hill, Freshwater, Cranmore, Sandown; var. PUSILLA Bab.—Headon Hill, Cranmore; var. ERICETORUM Reichb. (FLAVICORNIS Sm. non Forster)—Freshwater.

V. LACTEA Sm.—Cranmore, abundant.

V. LEJEUNEI Jord.—Beckett's Copse near Freshwater, one plant only. This is the only representative of the TRICOLORES section that we have seen in the Island.

[V. VECTENSIS F. N. Williams, gathered by C. E. Palmer outside Steyne Wood, Bembridge, in June 1900, we have entirely failed to find. (See Drabble, *Journ. Bot.*, 47, 1927)].

V. AGRESTIS Jord.—The only common member of the ARVENSES section in the Island; Freshwater, Cowes, St George's Down, Godshill, Alverstone, Sandown.

V. SEGETALIS Jord.—Totland, Wooton.

V. DESEGLISEI Jord.—Brading.

V DERELICTA Jord.—Mottistone.

V. ARVATICA Jord.—Newport.

V. ANGLICA Drabble—Near Beckett's Copse, Freshwater.

V. RURALIS Jord.—Newport, St Lawrence.

POLYGALA VULGARE.—Not common; Freshwater, Cranmore, St Lawrence, Ventnor.

P OXYPTERUM auct. angl. (? DUBIUM Bellynck)—Common on the Downs from Freshwater eastwards, also at Headon Hill, Bonchurch, etc. Stratton seems to have confused this plant with *vulgare*.

P. SERPYLLIFOLIUM Hese—Freshwater Downs, Headon Hill, Bleak Down, etc.; var. MAJUS R. & F.—Freshwater Downs, Colwell Heath; var. VINCOIDES Chodat—St George's Down.

P. CALCAREUM F. Sch.—Freshwater Downs.

FRANKENIA LAEVIS L.—King's Quay, Newtown.

SAPONARIA OFFICINALIS L.—Pan Mill, and by the Medina.

S. VACCARIA L.—Whitepit Lane, Newport.

SILENE CUCUBALUS Wibel (INFLATA Sm.), var. PUBESCENS DC.—Totland. Newport.

S. ANGLICA L.—Totland, Freshwater, Apes Down, Sandown, etc.

S NOCTIFLORA L.—Freshwater, Ryde.

LYCHNIS ALBA Mill.—Common; var. COLORATA Rostr. (INCARNATA Lamotte) —Alum Bay, High Down, Afton. This plant, which differs from ordinary *alba* in having pink flowers, has generally been confused with the hybrid ALBA × DIOICA, which also occurs in the Island. We are indebted to Mr J. E. Little for calling our attention to this variety.

CERASTIUM TETRANDRUM Curt.—Very common; var. PEDUNCULATUM Bab. —characterised merely by its very long pedicels, all grades between the ordinary form and the "variety" being found, Freshwater, Compton, Norton Spit; var. LUXURIANS Druce—a very large broad-leaved form, Afton. Compton; var. EGLANDULOSUM C. E. Salmon—a good variety, eglandular and with the habit of a small C. VULGATUM L. Freshwater Downs.

C. PUMILUM Curt.—Rare; Headon Hill, Afton Down, Norton Spit.

C. SEMIDECANDRUM L.—Not very common; Compton, Sandown, etc.; var. GLANDULOSUM Koch—Headon Hill, Norton Spit.

C. VISCOSUM L. (GLOMERATUM Thuill.)—Common; var. ROTUNDATUM Druce—with very large broad leaves, Brook; var. MACROPETALUM Druce—with petals much longer than sepals, Freshwater Downs. Afton Downs, Grange Chine, Brighstone, Newchurch, Alverstone, Marvell Copse, Sandown; var. APETALUM (Dum.)—Afton Down, Cranmore, Haven Street, Newchurch, Alverstone.

C. VULGATUM L. (TRIVIALE Link), var. HIRSUTUM Fries. the ordinary small-flowered form, common; var. PRATENSE Diard, petals much longer than sepals, a well-marked variety which has retained its distinctness in cultivation, Compton, Norton, Brook; var. MACROCARPUM (Schur), leaves up to 3 cm. in length, capsule 10-15 mm., Moon's Hill; var. PENTANDRUM Syme, a small annual plant with five stamens, Freshwater.

STELLARIA AQUATICA Scop.—Newport, St Lawrence, and by the Medina from Blackwater to Shide.

S APETALA Ucria, the form with straggling pale-green shoots (var. MAJOR R. & F.)—Norton Spit.

S MEDIA Vill., var. MAJOR Koch—Farringford.

S. NEGLECTA Weihe—Stamens 10, sepals hairy, Alverstone, Bembridge, 1860. A. G. More in Herb. Drabble; var. ELIZABETHAE (Schultz), stamens more than five, typically ten, sepals tuberculate, glabrous:—Merston.

ARENARIA SERPYLLIFOLIA L., var. SCABRA Fenzl—Freshwater Downs, Compton, Afton, Norton, etc.; var. VISCIDULA Roth—Freshwater, Norton, Shide; var. PATULA Martr.-Don.—Farringford; var. STRICTA Townsend—E. Medina; var. MACROCARPA Lloyd (A. LLOYDII Jord.)—Alum Bay, Freshwater Cliffs, Afton; var. SPHAEROCARPA Tenore (*non* Hooker, *nec* Rouy & Foucaud, *nec* Townsend)—Norton, Sandown, (see Drabble Journ. Bot., December 1930). Stratton's statement that SPHAEROCARPA Tenore is frequent on walls is based on a complete misunderstanding of SPHAEROCARPA.

A LEPTOCLADOS Gussone, var. SCABRA R. & F.—Freshwater, Headon Hill, Whippingham; var. VISCIDULA R. & F.—Norton; var. PETIOLATA Drabble—Freshwater; var. MICRANTHA Drabble—Headon Hill, High Down, Freshwater, Bembridge, Quarr. (See Drabble Journ. Bot., loc. cit.).

SAGINA MARITIMA Don—Afton Downs; [W. Cowes, July 1841, Dr Bromfield in Herb. Radcliffe, teste J. E. Little].

S APETALA Ard., var. BARBATA Fenzl—Moon's Hill, Newport, Wooton, St George's Down, Bembridge; var. PROSTRATA Gibs.—Moon's Hill, Newport.

S. FILICAULIS Jord.—Norton, Yarmouth, Quarr.

S. CILIATA Fr.—Not common; the glandular form at Headon Hill and Moon's Hill; the eglandular form at Headon Hill, Moon's Hill, Brook, Grange Chine, Carisbrooke, King's Quay; var. PATULA (Jord.)—Moon's Hill.

S PROCUMBENS L.—Abundant everywhere; var. MARITIMA Fries—Compton Bay; var. SPINOSA Gibs.—Grange Chine, Wooton, St Lawrence.

S. REUTERI Boiss.—Freshwater.

S. SUBULATA Presl—Headon Hill.

S. NODOSA Fenzl—[Bog at Freshwater, August 1838, Herb. Radcliffe, teste J. E. Little]; var. GLANDULOSA (Bess.)—Norton.

SPERGULA SATIVA Boenn.—Very rare; the Wilderness.

CLAYTONIA PERFOLIATA Donn—Weed at Newport, 1929.

MONTIA VERNA Neck. (CHONDROSPERMA Fenzl)—Cranmore.

HYPERICUM ANDROSAEMUM L.—Moon's Hill, Wooton, Firestone Copse, Quarr, St Lawrence.

H. PERFORATUM L., var. ANGUSTIFOLIUM DC.—St George's Down.

H. HUMIFUSUM L.—Common in W. Wight; Freshwater, Bouldnor, Parkhurst, etc.; var. DECUMBENS Reichb. (MAGNUM Bast.)—Highdown.

H. PULCHRUM L.—Not common; Parkhurst, Bleak Down.

H. MONTANUM L.—Still at Steephill.

H HIRSUTUM L.—Certainly not common in E. Wight, rare in W. Wight.

H. ELODES L.—Very local; Rookley Wilderness, Sandown, Lake.

MALVA MOSCHATA L.—Apes Down, St George's Down, Blackwater; var. HETEROPHYLLA Lej. & Court.—Cowes.

M. rotundifolia L.—Newport, Cowes, Quarr.

M. pusilla Sm., var. lasiocarpa C. E. Salmon, sepals triangular, herbaceous, but little accrescent:—Newport, Alverstone. (The fig. 110 in Butcher and Strudwick named *M. pusilla* Sm. shows the accrescent, spreading, roundish and mucronate sepals of *M. parviflora*. Moreover the carpels of *pusilla* are there stated (p. 97) to be glabrous, whereas the common form of *M. pusilla* in this country, var. *lasiocarpa* Salmon, has hairy carpels. Fig. 110 should be labelled *M. parviflora*).

M. parviflora L. Sepals strongly accrescent, roundish, mucronate:—Newport.

Lavatera hirsuta L.—By the Medina near Newport, 1928.

Linum catharticum L., var. dunense Druce—Compton Bay. This well-marked ecad develops into the ordinary form in cultivation.

Linum usitatissimum L.—Newport.

Geranium versicolor L. (striatum L.)—Sandown until recently.

G. pyrenaicum Burm.—Occasionally near Wroxall and Arreton.

G pusillum L.—Not common; Newport; [Newchurch, June 1844, Dr Bromfield in Herb. Radcliffe, teste J. E. Little].

G. rotundifolium L.—Rare; Farringford and between Shide and Blackwater.

G. columbinum L.—Blackwater; still on Apes Down and St George's Down.

G. lucidum L.—Rare; Godshill, Niton, St Lawrence; [St Lawrence, July 5th, 1838, in Herb. Radcliffe, teste J. E. Little].

G. Robertianum L., var. rubricaule Hornem., a form with the whole of the stem and leaves brilliantly red, Wooton. This is a different form from the common anthocyanic plant of exposed places.

Erodium maritimum L'Hérit.—Rare; Headon Hill, Totland.

Oxalis Acetosella L.—Not common; Newchurch, Alverstone.

O. corniculata L., var. purpurea Parl.—Established at Fishbourne.

Euonymus europaeus L.—Hamstead, Shide.

Rhamnus Frangula L.—Haven Street, Sandown; [Standwood, Ryde, June 1838, in Herb. Radcliffe, teste J. E. Little].

Genista anglica L.—Rare; Brookley Wilderness; [Forest near Cowes, (c. 1838), in Herb. Radcliffe, teste J. E. Little].

Ononis repens L., var. horrida Lange—Afton, Compton, etc.

Trigonella ornithopodioides DC.—Still at St Helens Green; Newport, F. J. H., May 1872, in Herb. Drabble.

Medicago Falcata L.—By the Medina near Newport.

M. silvestris Fries—By the Medina near Newport.

M. lupulina L., var. Willdenowiana Koch—Not common; Moon's Hill, Farringford, Newport, Whippingham.

M. denticulata Willd.—Not common; Moon's Hill, Brook, Newport; var. apiculata (Willd.)—Newport.

M. arabica Huds. (maculata Sibth.)—Very common and generally distributed.

MELILOTUS ALTISSIMA Thuill.—Totland, Norton Spit, by Medina, etc.; lusus UNGUICULATA (Ser.)—Norton Spit.

M. ALBA Desr.—Norton Spit, Hamstead, Newport.

M. ARVENSIS Wallr. (OFFICINALIS Lam.)—Highdown, Newport, Cowes; an "unguiculate" lusus similar to that of *M. altissima* occurs at Newport. (It should be noted that Stratton wrongly makes *officinalis* Lam. synonymous with *altissima* Thuill.).

M. INDICA All.—Newport, Wooton, etc.

TRIFOLIUM SUBTERRANEUM L. Afton, Compton, Grange Chine; [Northwood Park, May 27th, 1839, in Herb. Radcliffe, teste J. E. Little].

T. SUFFOCATUM L.—Still at St Helen's.

T. PRATENSE L., var. SATIVUM Schreb. and var. AMERICANUM Harz—Farringford, etc.; var. PARVIFLORUM Bab.—Beckett's Copse.

T. MARITIMUM Huds. (SQUAMOSUM L.)—Yarmouth.

T. INCARNATUM L. and var. STRAMINEUM Presl—In cultivated ground only; Afton, etc.

T. SCRABRUM L.—Afton; [E. Cowes, c. 1838, in Herb. Radcliffe, teste J. E. Little].

T. GLOMERATUM L.—Newchurch, Sandown.

T. REPENS L., var. RUBESCENS Ser.—Moon's Hill.

T. RESUPINATUM L.—Newport.

T. DUBIUM Sibth., var. PYGMAEUM Soy.-Will.—Freshwater Downs and Headon Hill; a mere ecad we believe.

T. FILIFORME L.—Headon Hill, Newport, Wooton, Ryde.

LOTUS CORNICULATUS L., var. HIRSUTUS Rouy (INCANUS Gray)—Moon's Hill; var. MICROPHYLLUS Meyer—a mere ecad; Compton, Newport.

L. TENUIS W. & K.—Colwell Bay, Newtown, Newport, Cowes; a very fleshy-leaved form in tidal ground at Whippingham.

L. ULIGINOSUS Schkuhr, var. GLABER Bréb. (GLABRIUSCULUS Bab.)—Freshwater Marsh.

ASTRAGALUS GLYCYPHYLLOS L.—Cliff-edge at St Lawrence; still on the undercliff near Ventnor.

CORONILLA VARIA L.—Cowes, Newport.

HIPPOCREPIS COMOSA L.—A form with pale lemon-yellow petals and with brown veins in the standard, on Afton Downs, June 1928.

VICIA HIRSUTA Gray—Freshwater, Newport.

V. TETRASPERMA Moench—Frequent in E. Wight, rare in W. Wight, Beckett's Copse; var. TENUISSIMA Druce—more frequent than the typical form; Cowes, Whippingham.

V. GRACILIS Lois.—Common in W. Wight; Totland, Newport, etc.

V. CRACCA L., var. INCANA Thuill. *non* Vill.—Bouldnor; var. LINEARIS Peterm. (LEPTOPHYLLA Fr.)—Freshwater Marsh and from Brook to Chiltern, abundant.

V. VILLOSA Roth, var. ANGUSTIFOLIA Rouy and var. LATIFOLIA Rouy—Totland.

V. VARIA Host (DASYCARPA Tenore)—Totland, Newport.

V. ANGUSTIFOLIA L., var. BOBARTII Koch—Moon's Hill, Totland; var. UNCINATA Desv.—Cranmore.

V. LATHYROIDES L.—Sandown.

LATHYRUS APHACA L.—Newport.

L. NISSOLIA L.—Totland, Wooton, Sandown.

L. HIRSUTUS L.—Totland, 1929 onwards; Newport.

L. PRATENSIS L., var. VILLOSUS Schleicher—Moon's Hill.

L. LATIFOLIUS L.—Established at Totland.

L. SILVESTRIS L.—St Lawrence, 1927; still at E. Cowes; [Bonchurch, T.H.A.S., July 1887, in Herb. Drabble; Shanklin, c. 1838, in Herb. Radcliffe, teste J. E. Little].

L. TUBEROSUS L.—Totland, 1931; [Golden Common, c. 1838, in Herb. Radcliffe, teste J. E. Little].

PRUNUS INSITITIA L.—High Down, St Lawrence.

[" P. CERASUS L., var. CAPRONIANA Dr. Bromfield, copses near Wooton Bridge, May 1839, in Herb. Radcliffe "].

SPIRAEA ULMARIA L., var. DENUDATA Boenn. (See Yapp, Ann. Bot., July 1912). Moon's Hill.

S. FILIPENDULA L.—Very rare; Downs between Calbourne and Carisbrooke.

POTENTILLA NORVEGICA L.—Cowes.

P. ANSERINA L., var. CONCOLOR Wallr. (SERICEA Hayne)—mature leaves silvery on both surfaces, Quarr, Binstead.

P. PALUSTRIS Scop.—[Freshwater Marsh, June 30th, 1840, in Herb. Radcliffe, teste J. E. Little]. Still there.

AGRIMONIA EUPATORIA L., var. SEPIUM Bréb.—common in thick hedgebanks and woods; we believe it to be merely a state, but undoubtedly it has often been confused with *A. odorata*.

A. ODORATA Mill.—Not common; Haven Street, St Lawrence.

POTERIUM POLYGAMUM W. & K. (MURICATUM Spach)—Bowcombe.

CRATAEGUS MONOGYNA Jacq., var. MICROPHYLLA Druce—Bouldnor; var. GLABRATA Sond. (LEIOCALYX Druce)—Freshwater.

PYRUS COMMUNIS L., var. ACHRAS (Gaertn.)—Farringford until 1929, now cut down.

P. MALUS L., var. MITIS Wallr.—Freshwater, Alverstone.

CHRYSOSPLENIUM OPPOSITIFOLIUM L.—Newchurch.

RIBES UVA-CRISPA L., with ovary pubescent, eglandular, fruit glabrous, and var. GROSSULARIA (L.) with fruit glandular-hairy, in thickets on Freshwater Downs.

COTYLEDON UMBILICUS L.—Godshill.

SEDUM PURPUREUM Link (TELEPHIUM auct.)—Alverstone.

S. ANGLICUM Huds.—Headon Hill, abundant.

S. REFLEXUM L.—Afton Downs, Sandown; [Godshill, July 5th, 1838, in Herb. Radcliffe, teste J. E. Little].

S. DASYPHYLLUM L.—Still at Alverstone.

DROSERA ROTUNDIFOLIA L.—Very local; Bleak Down, Sandown; [Near Cowes, c. 1838, in Herb. Radcliffe; in the same packet, but loose and without label is D. LONGIFOLIA L., teste J. E. Little].

EPILOBIUM ANGUSTIFOLIUM L., var. BRACHYCARPUM (Leight.)—St George's Down.

E. HIRSUTUM L., var. VILLOSISSIMUM Koch—Moon's Hill, Freshwater Marsh, Calbourne.

E. PARVIFLORUM Schreb., var. MOLLISSIMUM Levl. (provisionally adopting this name for the densely villous plant)—Headon Hill, Wooton.

E. ROSEUM Schreb.—Rare; Ryde.

E. TETRAGONUM L.—Common; Freshwater, etc.

E. LAMYI Schultz—Frequent; Moon's Hill, Totland, Newport, Ryde, Whitwell.

E. OBSCURUM Schreb.—Very rare; St George's Down, Whitwell. Stratton says "frequent," this surely indicates that he entirely misunderstood this plant.

E. PALUSTRE L.—Freshwater, St Helen's, Sandown; var. PUBESCENS Coss. & Germ.—Freshwater Marsh.

CIRCAEA LUTETIANA L., var. CORDIFOLIA Lasch.—Common; the usual form in the Island.

ŒNOTHERA ODORATA Jacq.—Sown at St Helen's Spit in 1858 by A. G. More; still there in 1931.

BRYONIA DIOICA Jacq.—Rare; Downs between Buckham and Shorwell, Westover Downs.

SANICULA EUROPAEA L.—In scrub on Freshwater Downs, abundant.

CONIUM MACULATUM L.—Hamstead, Cowes, Alverstone, St George's Down.

SMYRNIUM OLUSATRUM L.—Norton, St Lawrence.

BUPLEURUM ROTUNDIFOLIUM L.—Cowes, 1926.

APIUM INUNDATUM L.—Sandown.

PIMPINELLA SAXIFRAGA L., f. ARENARIA N. Bryhn; this dwarf plant is abundant on Freshwater Downs, and is now being tested in cultivation. It was observed here by Dr Thorild Wulff in 1894, and the name was published in Botaniska Notiser.

ANTHRISCUS SILVESTRIS Hoffm., var. LATISECTA Druce—Freshwater, Brooke.

A. VULGARIS Bernh.—St Helen's, Sandown.

CARUM CARVI L.—Cowes, Newport.

FOENICULUM VULGARE Miller—Norton Spit. Stratton writes (Nat. Hist.) "probably not native in Wight," but no grounds are stated for his opinion. If this plant is truly native anywhere in England—and we see no reason for doubting that it is—then this may well be regarded as a native locality.

CRITHMUM MARITIMUM L.—On chalk-cliffs abundant, and on sandy shores, e.g. at Norton Spit.

ŒNANTHE PIMPINELLOIDES L.—Freshwater, Wooton, etc.

Œ. LACHENALII C. Gmel.—Freshwater Marsh, Cowes, The Wilderness.

Œ. CROCATA L., var. TENUIFOLIOLATA Druce—Whippingham.

AETHUSA CYNAPIUM L., var. AGRESTIS Wallr.—Moon's Hill; we believe this to be a mere growth-form.

ANGELICA SILVESTRIS L.—Abundant in damp woods and shady lanes throughout W. Wight.

CORIANDRUM SATIVUM L.—Newport.

Daucus Carota L.—Abundant both N. & S. of the Chalk, as well as on the Downs; var. comosus Grogn.—Moon's Hill; var. nanus Druce (an ecad we think)—Freshwater and Afton Downs.

D. gummifer All.—Cliffs at Freshwater and Steephill; var. intermedius Corb.—Cliffs at Freshwater. Stratton's remark that "it is doubtful if the sea-side thick-leaved *Daucus* which grows on the Freshwater Cliffs and elsewhere by the sea is *D. gummifer* Allioni" seems to suggest that he had var. *intermedius* in mind. The true *D. gummifer* certainly grows between Freshwater and the Needles, though sparingly. We think that var. *intermedius* should be regarded as a variety of *D. Carota* rather than of *D. gummifer*.

Caucalis nodosa Scop. (Torilis nodosa Gaertn.), var. pedunculata R. & F.—Freshwater Downs, St Lawrence.

C latifolia L.—Newport.

Sambucus Ebulus L.—Brading.

Galium Cruciata Scop.—Not common as Stratton describes it, at least in W. Wight; fairly frequent in E. Wight.

G verum L., var. maritimum DC.—Freshwater Downs, Norton Spit, etc.; an ecad we believe.

G. tricorne Stokes—Rare, by the Medina; [Egypt near Cowes, July 1839, in Herb. Radcliffe, teste J. E. Little].

Sherardia arvensis L., var. maritima Griseb.—Freshwater.

Valeriana dioica L.—Still at Freshwater, Sandown.

Valerianella rimosa Bast. (Auricula DC.)—Freshwater; [Broadfield, I.W., July 17th, 1840, Dr Bromfield, in Herb. Radcliffe, teste J. E. Little].

V. carinata Loisel.—Newport, Ryde, St Lawrence.

V. eriocarpa Desv.—Carisbrooke Castle until recently.

V. dentata L., var. mixta (L.).—Chale.

Dipsacus sativus L. (fullonum auct.)—Norton, Newport, Shide, Cowes.

Scabiosa Columbaria L., f. nana T. Wulff—A small erect state on the Downs at Freshwater.

Solidago Virgaurea L.—Northwood, Wooton, Ryde, Alverstone.

Aster Novi-Belgii L.—Wooton.

A. Tripolium L., var. glaber Bolzon—Freshwater, Norton, Shide, Cowes; and with white, not purple, ray-florets at Norton; var. discoideus Reichb.—Freshwater, Norton, Newtown, Wooton.

Erigeron canadense L.—Newport, Pan gravel-pit, Cowes.

E. acre L.—Afton Down, Apes Down, Cowes.

Filago minima Fries—Still at Headon Hill and Bleak Down.

Inula Helenium L.—Ningwood, etc.; [Banks of the Medina, August 1838, in Herb. Radcliffe, teste J. E. Little].

I. Conyza DC. (squarrosa (L.) S. & T.)—Stratton gives "on the chalk"; it is abundant on the Lower Greensand at St Lawrence and St Catherine's Point, also on the Oligocene at Totland.

I. crithmoides L.—Yarmouth 1913 to 1931; still there; Newport, Newtown on tidal mud. This plant is by no means "confined to maritime rocks in the west of Britain from Wigtown to south-west Wales and Cornwall," as stated by J. Fraser in B.E.C. Rep. for 1928, p. 913. Its presence in great abundance on shingle at Hurst Castle is well known. (See Carey and Oliver, "Tidal Lands," p. 93).

Bidens tripartita L., var. integra Koch—Alverstone.

Achillea Millefolium L., var. conspicua Druce—more abundant than the small-headed form at Moon's Hill and elsewhere in W. Wight; var. lanata Koch—Alum Bay.

Anthemis Cotula L., var. latisecta Thell.—Norton, Godshill.

A. nobilis L.—St Anthony's Common, etc.

Chrysanthemum segetum L.—Shalfleet, Newport.

Matricaria inodora L., var. maritima L.—Norton, Cowes, Wooton, St Helens; var. salina DC.—Wooton, Sandown, St Helens; [Black Gang Chine, July 1839, in Herb. Radcliffe, teste J. E. Little (as inodora)].

M. Chamomilla L.—Newport 1924, Totland 1928, Alverstone and Sandown 1930; certainly very rare in the Island. The record from Newport by J. W. Long in Rayner's "Supplement" seems hitherto to be the only one.

M. suaveolens Buch., which, according to Stratton, was rare up to 1909, is now abundant and widely spread.

Tanacetum vulgare L.—Shorwell, St George's Down, Cowes.

Artemisia Absinthium L.—Cowes, Ventnor, St Lawrence.

A. maritima L.—Quarr; var. gallica (Willd.)—Quarr.

Petasites fragrans Presl—Abundant at Freshwater, Shide, etc.

Senecio silvaticus L.—Abundant at Headon Hill, Bleak Down, etc.

S. viscosus L.—Newport, Cowes.

S. erucifolius L., var. viridulus Martr.-Don.—Moon's Hill; a mere state we believe.

S. aquaticus Hill—The typical form is not very common; var. pennatifidus Gr. & Godr.—common; Freshwater, Merston, etc..

S. erraticus Bert.—Freshwater, Thorley.

S. campestris DC.—Still on Westover Down.

S. Cineraria DC.—Steephill; Cineraria × Jacobaea—Newport, Yarmouth.

Carlina vulgaris L.—The dwarf state of this plant on Freshwater Downs was described by Dr Thorild Wulff, who gathered it in 1894, in Botaniska Notiser as f. humillima "a most distinguished variety."

Arctium majus Bernh.—St George's Down, Godshill.

A. minus Bernh.—Moon's Hill, St George's Down, Godshill, Alverstone.

A. vulgare Evans (intermedium Lange)—Beckett's Copse, St George's Down, Alverstone, Godshill.

Carduus tenuiflorus Curt.—Abundant on the Downs from Alum Bay to Brook.

Cirsium eriophorum L., var. britannicum (Petrak)—Rare; Alum Bay, Buckham.

C. acaule (L.) Weber, var. caulescens Pers.—Alum Bay.

C. pratense (Huds.) DC.—Freshwater, Norton, Yarmouth, Haven Street, Wilderness.

C. arvense (L.) Scop., var. setosum C. A. Mey.—Newport.

C. palustre L., var. ferox Druce—Freshwater Downs.

Onopordon Acanthium L.—Very rare; Moon's Hill.

Serratula tinctoria L., var. alpina Grenier & Godron—Freshwater Downs, Afton Downs; exactly like the Lizard plant—an ecad we believe; var. integrifolia Koch—Norton.

Centaurea Cyanus L.—Newport, Alverstone, Sandown.

Lapsana communis L., var. glandulosa Freyn—Moon's Hill, Whippingham.

Picris hieracioides L., var. gracilis (Jord.)—Carisbrooke. Grown from seed at Moon's Hill, *gracilis* gave exceptionally fine and profusely branched plants of typical *hieracioides*; var. *gracilis*, then, is apparently merely a growth form.

Crepis taraxacifolia Thuill. This plant, said by Stratton to be rare, is now abundant everywhere; var. subindivisa Druce—Shanklin.

Crepis virens L., var. diffusa DC.—Alum Bay, Freshwater, etc.; var. anglica Druce & Thellung—Totland, Moon's Hill; var. agrestis Willd.—High Down.

C. biennis L.—Alum Bay, High Down, Farringford, Freshwater, and on railway-banks between Wooton and Ryde.

Hypochaeris glabra L.—Locally abundant; Alum Bay, Headon Hill, Totland.

H. radicata L., var. leiocephala Regel—Freshwater; var. hispida Peterm., with stem and involucral scales very bristly, St Helens.

Leontodon hirtus L.—Not confined to sandy and gravelly fields as given by Stratton; common on the chalk Downs at Alum Bay and Freshwater; var. lasiolaenus Druce—Norton Spit, St Lawrence

Lactuca Serriola L.—Cowes; var. integrata G. & G.—Newport, Cowes.

L. muralis Gaertn.—Rather rare; Quarr, Binstead, St Lawrence.

Sonchus oleraceus L., var. triangularis Wallr.—Freshwater; var. runcinatus Coss. & Germ.—Freshwater; var. integrifolius Wallr.—Freshwater.

S. asper Hill, var. pungens Bisch.—Moon's Hill; var. integrifolius Lej.—Wooton; from Alverstone to Shanklin, abundant, and the only form seen.

S. arvensis L., var. glabrescens Hall—Newport, Cowes.

Tragopogon porrifolius L.—Newport, Wroxall.

Jasione montana L.—Rare; High Down; Bleak Down.

Campanula Trachelium L.—Rare; Calbourne, Apes Down; [Marwell (*sic*) Copse, Newport, 1838, in Herb. Radcliffe, teste J. E. Little].

C. rotundifolia L.—The dwarf state found on Freshwater Downs was named f. pygmaea in Botaniska Notiser by Dr Thorild Wulff, who visited Freshwater in 1894.

C. glomerata L.—White flowered, Freshwater, Afton Downs.

Legousia (Specularia) hybrida Delarbre—Afton, Chale, Bembridge.

Erica cinerea L., var. splendens Vigurs—a form with very large rose-coloured flowers in long dense racemes, Bouldnor, Cranmore.

Limonium humile Mill.—Freshwater, Whippingham, Wooton.

Armeria planifolia Syme—Freshwater Cliffs, Afton.

Primula vulgaris Huds., var. caulescens Koch—Freshwater.

P. vulgaris × veris—Abundant at Moon's Hill, Freshwater, etc.

Anagallis arvensis L., var. verticillata Diard, with three or more leaves in the whorl—Moon's Hill, abundant; var. carnea Schrank, with flesh-coloured flowers, Cowes, St George's Down; var. lilacina Alef., with lilac flowers, Grange Chine.

A. tenella Murr.—Bleak Down, Sandown.

Centunculus minimus L.—Still on Bleak Down.

Samolus Valerandi L.—Freshwater, abundant, Cowes; [Rocken End, I.W., July 1838, in Herb. Radcliffe, teste J. E. Little].

Vinca major L.—Freshwater, etc.

Erythraea Centaurium Pers., var. capitata Koch—Downs at Freshwater and Afton.

E. capitata Willd.—Fairly common on the Downs in W. Wight; Highdown, Westover Down, etc.

E. pulchella Fr. and its forma subelongata Wittr.—Very common; f. Schwartziana Wittr.—On the Downs at Alum Bay and Freshwater, Bonchurch.

E. tenuiflora Hoffmgg. & Link—Probably now extinct except on private ground.

Gentiana lingulata C. A. Agardh, var. praecox Towns.—High Down, Freshwater, Bonchurch. The flowers are as often five-partite as four-partite.

G. Amarella L.—Abundant on High Down, Afton Down, Westover Down, Apes Down; occasionally white-flowered.

Cynoglossum officinale L.—Abundant on the Downs at Freshwater and Compton.

Symphytum officinale L.—Not common in W. Wight, but abundant by the eastern Yar.

S. caeruleum Pitm. (? officinale × peregrinum)—Moon's Hill, Totland.

Borago officinalis L.—Moon's Hill, Newport, Newchurch, Ventnor.

Anchusa sempervirens L.—Ventnor, St Lawrence.

A. officinalis L.—Cowes.

Lycopsis arvensis L.—Alum Bay, Headon Hill, Compton, St George's Down, Blackwater, Sandown. This plant is widely distributed and cannot be called rare and local as Stratton describes it.

Pulmonaria longifolia Boreau (angustifolia auct. angl.)—Wooton. Haven Street, Quarr, etc., etc.; [Parkhurst Forest, April 13th. 1839, in Herb. Radcliffe, teste J. E. Little].

Myosotis palustris Hill—Not common; Newport, Alverstone.

M. caespitosa F. Schultz—Pool at Alum Bay.

M. repens G. & D. Don—Sandown.

M. VERSICOLOR Sm.—Common on the Downs and on Headon Hill; var. DUBIA Arrondeau—High Down, Alverstone.

M. COLLINA Hoffm.—Common; var. MITTENII Baker—Afton Down.

LITHOSPERMUM OFFICINALE L.—Shide, Ryde; var. PSEUDO-LATIFOLIUM C. E. Salmon—Apes Down, Bonchurch, St Lawrence.

L. ARVENSE L.—St Lawrence.

E. PLANTAGINEUM L.—Cowes.

CALYSTEGIA SEPIUM Br., var. COLORATUS Lange—Brook.

CONVOLVULUS ARVENSIS L., var. LINEARIFOLIUS Choisy—Freshwater.

CUSCUTA EUROPAEA L.—(" Not recorded for some years "—Stratton), Headon Hill, 1931, St Lawrence, 1926.

C. EPITHYMUM Murray—Headon Hill, Cranmore, etc.

C. TRIFOLII Bab.—Rare; Totland.

SOLANUM DULCAMARA L., var. VILLOSISSIMUM Desv.—Totland, Freshwater, Compton, Ryde, St Helens.

S. NIGRUM L.—Common everywhere on cultivated land.

LYCIUM CHINENSE Mill.—Established at Compton, Chale, etc.

DATURA STRAMONIUM L.—Newport, Cowes.

HYOSCYAMUS NIGER L.—Afton abundant in 1931. Compton, Newtown, Whippingham, Shide.

VERBASCUM THAPSUS L.—Fairly common on the chalk.

V. VIRGATUM Stokes—Cowes, Ryde.

LINARIA CYMBALARIA Mill.—Moon's Hill near Freshwater. (No record for W. Wight in Nat. Hist.).

L. ELATINE Mill.—Common in W. Wight both on and off the chalk; Newport, Alverstone.

L. SPURIA Mill.—Freshwater.

L. PURPUREA Mill.—Norton Spit, Shide. It persisted for some years in both localities, but has now gone.

L. REPENS Mill.—Northwood, Cranmore.

L. VULGARIS Mill.—A form with narrowly linear leaves, between Brook and Chilton Chine; a plant with corollas bearing two short lateral spurs in addition to the median long spur, at Freshwater 1924.

L. VULGARIS × REPENS—Cowes; [Near Cowes, August 1838, Dr Bromfield in Herb. Radcliffe, teste J. E. Little].

L. MINOR Desf.—Ningwood, Cowes, Alverstone.

ANTIRRHINUM ORONTIUM L.—Newport, Cowes.

SCROPHULARIA AQUATICA L., var. PUBESCENS Bréb.—Freshwater; var. APPENDICULATA Mérat.—Freshwater.

VERONICA HEDERAEFOLIA L.—Abundant everywhere in W. Wight.

V. POLITA Fr.—Common.

V. AGRESTIS L.—In Nat. Hist. Stratton stated that this plant was common; later, in Journ. Bot., 1913, he writes, " Does not occur in I. of Wight. Townsend's records are in error," but he does not refer to his own plant from Totland, which is wrongly named. We were assured by another collector that *agrestis* grew at Yarmouth and at Freshwater Bay; the plants were *polita*. *V. agrestis* is exceedingly rare in I. of Wight; we have found it once only and very sparingly near Godshill in 1930.

V. PERSICA Poir., var. ASCHERSONIANA Lehm.—Common everywhere; var. CORRENSIANA Lehm.—Totland, Moon's Hill; var. KOCHIANA Godr. —Freshwater, Whippingham, Alverstone. (See Drabble & Little, Journ. Bot., July and August 1931).

V. ARVENSIS L., var. NANA Poir.—Headon Hill, Freshwater, Compton, Whippingham. We believe this to be a mere growth form.

V. SERPYLLIFOLIA L., var. OBSCURA Drabble & Salmon—Moon's Hill, Newport.

V. CHAMAEDRYS L.—White-flowered (var. ALBA Druce), Moon's Hill; var. RUDOLPHIANA Hayne—Totland.

V. MONTANA L.—Not common; Freshwater, and occasionally in E. Wight.

V. SCUTELLATA L.—With blue flowers at Cranmore; with pale-pink flowers at Freshwater.

V. AQUATICA Benqueral, var. ANAGALLIFORMIS (Boreau)—Freshwater.

EUPHRASIA BREVIPILA Burnat & Gremli—Freshwater Marsh, St Lawrence.

E. NEMOROSA Pers.—Common; Norton, St George's Down, Haven Street, St Helens, etc.; var. CILIATA Drabble—Freshwater, St George's Down, St Helens.

E. OCCIDENTALIS Wettst.—Alum Bay, Freshwater Downs, Compton.

E. PSEUDO-KERNERI Pugsley (E. KERNERI auct. angl.)—Carisbrooke, St George's Down, Apes Down.

BARTSIA ODONTITES Huds., var. SEROTINA (Dum.)—St Lawrence; var. DIVERGENS (Jord.)—Not uncommon.

MELAMPYRUM PRATENSE L., var. LAURIFOLIUM Beauv.—Northwood.

OROBANCHE CAERULEA Vill. (O. PURPUREA Jacq.)—Sandown, 1931.

O. PICRIDIS F. Schultz—The latest date given in Nat. Hist. is 1883 for Rosehall Green. There is a specimen from this, the only known locality in the Island. labelled July 1890, J. H. A. Stewart, in Herb. Drabble.

O. HEDERAE Duby—By no means rare as stated in Nat. Hist.; Moon's Hill, St Lawrence, Ventnor, Bonchurch, etc.

O. ELATIOR Sutton—On CENTAUREA SCABIOSA at Alum Bay, 1913.

O. RAPUM-GENISTAE Thuill.—Haven Street.

LATHRAEA SQUAMARIA L.—Sullen's Copse near Newport.

UTRICULARIA NEGLECTA Lehm. (MAJOR Schmidel)—Freshwater Marsh.

PINGUICULA LUSITANICA L.—Near Cowes, c. 1913 (Miss A. E. Cook); Bleak Down.

MENTHA ALOPECUROIDES Hull—Newport.

M. LONGIFOLIA Huds. (SILVESTRIS L.)—Cowes; [Freshwater, c. 1838, in Herb. Radcliffe, teste J. E. Little].

CALAMINTHA OFFICINALIS auct. angl. (C. ASCENDENS Jord.)—Freshwater, Moon's Hill in W. Wight.

C. SILVATICA Bromf. (*Non* CLINOPODIUM GRANDIFLORUM O.K. as given by Stratton)—Still abundant at Apes Down.

MELISSA OFFICINALIS L.—Shide, Brading.

SCUTELLARIA GALERICULATA L., var. LITTORALIS Druce—King's Quay, Quarr.

S. MINOR Huds.—Abundant as a woodland plant at Wooton and Haven Street.

NEPETA CATARIA L.—Idlecombe.

PRUNELLA VULGARIS L., var. NEMORALIS Béguinot—Moon's Hill, very finely developed; a growth form only, we believe.

MARRUBIUM VULGARE L. Given for the chalk-downs only in Nat. Hist. and stated to be not very common. It grows abundantly on the Downs at Alum Bay and Freshwater, and occurs also on the Wealden in the South of the Island.

STACHYS BETONICA Benth. (OFFICINALIS Trev.)—Not only in woods and hedges as given in Nat. Hist., but abundantly on the Downs at Freshwater and elsewhere as f. NANA Druce, exactly like that at the Lizard, passing into the ordinary form in the longer herbage near the scrub-clumps.

STACHYS PALUSTRIS L.—The ordinary plant at Moon's Hill; var. CANESCENS (Schultz) as a weed in very dry cornfields at Afton, etc.

S. SYLVATICA × PALUSTRIS (S. AMBIGUA Sm.) Moon's Hill, Chilton, Northwood.

S. ANNUA L.—Cowes.

GALEOPSIS INTERMEDIA Vill. (LADANUM L., p.p.)—Moon's Hill.

G. TETRAHIT L., var. ARVENSIS Schleich.—St Lawrence; var. SILVESTRIS Schleich.—Beckett's Copse; var. NIGRESCENS Bréb.—Alverstone.

G. BIFIDA Boenn.—Moon's Hill.

LAMIUM AMPLEXICAULE L.—Totland, Ningwood, Newport; the cleistogamous form at Moon's Hill; this is a frequent spring and autumn state of the plant and was wrongly given varietal rank by Reichenbach (Icon. Crit. 8) as var. *clandestinum*, and by Saint-Lager (Et. fl.) as var. *cryptanthum*. (See Rouy Fl. Fr. xi).

L. HYBRIDUM Vill.—Freshwater, Colwell, Godshill.

L. PURPUREUM L., var. EXANNULATUM Loret & Berg.—Farringford; var. DECIPIENS Sonder—Newport, Wooton, Godstone.

PLANTAGO CORONOPUS L., var. PYGMAEUS Lange—Alum Bay, Freshwater, etc.

P MARITIMA L.—The typical plant at Norton Spit and elsewhere; var. LATIFOLIA Syme—Whippingham.

P. LANCEOLATA L., var. ELLIPTICA Druce—Moon's Hill.

P. MEDIA L.—Abundant on the chalk; var. MONNIERI Giraud (? var. LANCEOLATIFORMIS Druce, ? var. LONGIFOLIA Meyer)—Norton.

P MAJOR L., var. INTERMEDIA Syme—Norton.

ATRIPLEX LITTORALIS L.—Common; var. MARINA (L.), (SERRATA Syme)—Whippingham, Quarr, St Helens.

A. PATULA L., var. LINEARIS Moss & Wilmott—Moon's Hill, Golden Hill, Yarmouth; var. ANGUSTISSIMA G. & G.—Freshwater, Golden Hill, S. Lawrence. We have raised plants exactly resembling *angustissima* from seeds of *linearis*, and believe it to be a mere state of *linearis*. Var. ERECTA Lange—Common everywhere in cultivated land; " var.

BRACTEATA Westerlund"—Moon's Hill, Newport, St Helens; the large bracteoles which characterise this state, as we believe it to be, may be associated with several varieties of *A. patula*.

A. HASTATA L.—Common; Moon's Hill, etc.; var. MICROTHECA Rafn.—Moon's Hill.

A. DELTOIDEA Bab.—Moon's Hill, etc.; var. PROSTRATA Bab.—by the shore at King's Quay, Ryde and elsewhere.

A. GLABRIUSCULA Edmondst. (VIRESCENS Lange)—St Helens, Ryde; var. BABINGTONII (Woods)—Yarmouth, Quarr; var. PSEUDO-CALOTHECA Ar. Bennett—We have from Wooton (September 1930) a plant which to us is indistinguishable from that gathered at Keiss near Wick, Caithness, and thus named by Mr A. J. Wilmott for Mrs Wedgwood.

A. MARITIMA E. Hallier (A. LACINIATA auct. angl.)—Totland 1913; [Yarmouth, c. 1838, in Herb. Radcliffe, teste J. E. Little].

SALICORNIA RADICANS Sm.—Norton, Newport, St Helens.

S. LIGNOSA Woods—Newtown.

S. DOLICHOSTACHYA Moss—Norton Spit, Newport, St Helens.

S. EUROPAEA L. (S. HERBACEA auct.)—Norton Spit, Yarmouth, Newport, St Helens; var. STRICTA Dum.—Norton Spit, Newport, St Helens.

S. RAMOSISSIMA Woods—Norton Spit, Fishbourne, St Helens.

S. GRACILLIMA (Towns.) Moss—Norton Spit, Newport, St Helens.

S. APPRESSA Dumort.—Norton Spit, Fishbourne.

S. DISARTICULATA Moss—Norton Spit, Yarmouth, St Helens.

SUAEDA MARITIMA Dumort.—Abundant in salt-marshes and estuaries; var. PROCUMBENS Syme—Quarr; var. FLEXILIS Rouy—Quarr.

SALSOLA KALI L.—Norton Spit, King's Quay, St Lawrence.

POLYGONUM CONVOLVULUS L.—The typical form is not common; Cowes; var. SUBALATUM Lej. & Court.—Abundant generally.

P. DUMETORUM L.—Newport (1924), Sandown (1931), Alverstone.

P. HETEROPHYLLUM Lindman, var. ANGUSTISSIMUM Meisn.—Freshwater; var. RURIVAGUM (Jord.)—Moon's Hill, Farringford; var. LITTORALE Koch—Freshwater Gate, Totland, Yarmouth, Newport.

P AEQUALE Lindman—Alum Bay, Moon's Hill, Freshwater Gate, Totland, Yarmouth, Newport.

P. RAII Bab.—Recorded from several stations in Nat. Hist and stated in Rayner's "Supplement" to have been collected at Yarmouth in 1918 and seen there since that date. We have failed to find it at Totland, Freshwater, Norton, Colwell or Yarmouth, all given as localities for *Raii* in Nat. Hist., but *P. heterophyllum* Lindm., var. *littorale* Koch grows in several of these localities (e.g. Yarmouth and Freshwater Gate), and we think that some, at least, of the records for *Raii* may be erroneous.

P. PERSICARIA L.—Common; var. RUDERALE Meisn.—Totland; var. ELATUM G. & G.—Moon's Hill, Gogger Hill; var. DEPAUPERATUM Meisn.—St George's Down. We believe all these to be growth forms.

P PETECTICALE Stokes (P. MACULATUM Bab., P. NODOSUM Pers.)—Alverstone.

FAGOPYRUM ESCULENTUM Moench—Newport.

RUMEX GLOMERATUS Schreb. (R. CONGLOMERATUS Murr.), var. DIVARICATUS Bluff. & Fing.—Newport.

R. CONDYLODES M. Bieb. (R. SANGUINEUS, var. VIRIDIS Sibth., R. NEMOROSUS Schrad., R. VIRIDIS Sibth. of Druce's List)—Common everywhere; f. SANGUINALIS Moss is not uncommon. (*R. sanguineus* L. is wrongly recorded from the Island in Nat. Hist.).

R. PULCHER L.—Totland, Compton, Grange Chine, Newtown, Newport.

R. OBTUSIFOLIUS L.—Common everywhere; var. SILVESTRIS (Wallr.), (MICROCARPUS Dierb.)—Newport.

R. CRISPUS L.—Common everywhere; var. TRIGRANULATUS Syme—Bouldnor, Yarmouth, Alverstone; var. PLANIFOLIUS Schur (ELONGATUS Ley)—Moon's Hill, Newport; in cultivation this variety retains its characteristic long flat-leaves, lax inflorescence and tall growth.

R. HYDROLAPATHUM Huds.—Abundant by the W. and E. Yars.

R. MAXIMUS auct. angl. (R. LATIFOLIUS Borrer)—Freshwater, Alverstone. This plant is often regarded as a hybrid between *R. Hydrolapathum* and *R. obtusifolius*, but we have at present no evidence of its hybrid nature.

R. ACETOSELLA L., var. ANGIOCARPUS (Murb.)—Headon Hill, Compton.

DAPHNE LAUREOLA L.—Freshwater, Ryde.

HIPPOPHAE RHAMNOIDES L.—Stated in Nat. Hist. (1909) to be very rare, one locality only being given—St Helens. It is certainly not rare now (1931). It fruits freely (e.g., at Totland) and may be bird-sown in many of its stations.

VISCUM ALBUM L.—Not uncommon; on *Tilia* at Newport.

EUPHORBIA PLATYPHYLLOS L.—Still at Whippingham.

E. VIRGATA W. & K.—Newport.

E. PORTLANDICA L.—Still at St Helens.

E. EXIGUA L., var. RETUSA DC.—Sandown.

MERCURIALIS ANNUA L.—Moon's Hill, Thorley, Shorwell, Cowes; [Northwood Park, September 1838, in Herb. Radcliffe, teste J. E. Little].

URTICA DIOICA L., var. ANGUSTIFOLIA Wimm. & Grab.—Locally very common, Freshwater, Northwood, etc.; var. SUBINERMIS Uechtr.—Farringford, Freshwater.

U. URENS L.—Stated in Nat. Hist. to be not very common. We find it very commonly at Newport, etc.

MYRICA GALE L.—Sandown.

CARPINUS BETULUS L., var. PROVINCIALIS G. & G.—Moon's Hill.

CORYLUS AVELLANA L., var. GLANDULOSA Druce—St George's Down.

CERATOPHYLLUM DEMERSUM L.—Alverstone, Brading.

HYDROCHARIS MORSUS-RANAE L.—Still in the pond at Norton (1931). Stratton (Nat. Hist.) states without giving any evidence that it is not a native. We have no evidence that it was ever planted there. It is recorded for the mainland of Hampshire. That it was planted by Bell Salter at Barrett's between Ryde and Brading is, of course, well known.

STRATIOTES ALOIDES L.—Still in the pond at Sandown; now (1931) in abundance.

NEOTTIA NIDUS-AVIS Rich.—Calbourne.

SPIRANTHES AUTUMNALIS Rich. (S. SPIRALIS Koch)—We cannot accept Stratton's statement (Nat. Hist.) that this is "not common." It occurs in great abundance both on and off the Downs at Alum Bay, High Down, Afton, Totland, Sandown, etc.

CEPHALANTHERA GRANDIFLORA Gray—Westover (1931).

EPIPACTIS LATIFOLIA Sw., sensu stricto—Beckett's Copse, Calbourne Bottoms.

E. PALUSTRIS Sw.—Abundant at Totland, Cranmore, Chale.

ORCHIS PYRAMIDALIS L.—Abundant from Alum Bay to High Down, and at Compton.

O. USTULATA L.—Freshwater.

O. MORIO L.—Locally abundant; Freshwater Downs, Farringford, Headon Hill; var. CHURCHILLII Druce—Farringford, Brighstone.

O. MASCULA L.—Abundant on the Downs at Freshwater; var. OBTUSIFLORA Koch—Freshwater and Afton Downs.

O. INCARNATA L.—Rare; Totland, Freshwater, Bouldnor.

O. PRAETERMISSA Druce—Headon Hill, Freshwater, Wooton, Newchurch, on the bare Downs at Freshwater.

O. LATIFOLIA auct. angl.—Headon Hill, Totland, Freshwater, Colwell.

O. ERICETORUM Linton—Not common; Wooton, Alverstone, Sandown, Blackwater, St Anthony's Common.

O. FUCHSII Druce—Abundant; Moon's Hill, Freshwater Downs, Beckett's Copse, Cranmore, Wooton.

OPHRYS APIFERA Huds.—Abundant on the Downs; Alum Bay, High Down, Afton, Compton, etc.; var. FLAVESCENS Rost.—Afton (Miss A. White); [var. TROLLII is recorded from Brading (Miss M. Neal) in Rayner's "Supplement." The plant with non-reflexed terminal-lobe of labellum found by us at St Lawrence and elsewhere is not var. *Trollii*, which differs in other characters from typical *O. apifera*].

O. MUSCIFERA Huds.—By no means frequent; Woodside.

GYMNADENIA CONOPSEA Br.—Alum Bay.

HABENARIA VIRIDIS (L.) Br. (COELOGLOSSUM VIRIDE Hartm.)—We have seen a plant from the Eastern side of the Island, but have not ourselves found it.

H. BIFOLIA (L.) Br. (PLATANTHERA BIFOLIA Reichb. f.)—Cranmore.

H. CHLORANTHA Bab. (PLATANTHERA CHLORANTHA Reichb.)—St Helens.

IRIS FOETIDISSIMA L.—Abundant in W. Wight; var. CITRINA Bromf.—Norton.

I. PSEUDACORUS L., var. ACORIFORMIS (Bor.)—Freshwater.

NARCISSUS PSEUDO-NARCISSUS L.—Farringford, Chale, Kingston, etc.

N. BIFLORUS Curt.—[Gurnet (i.e. Gurnard) wood, April 1838, in Herb. Radcliffe, teste J. E. Little]. Still there 1916.

N. POETICUS L.—In fields at Swainstone.

GALANTHUS NIVALIS L.—Still at Freshwater; [Osborne Lane, c. 1838, in Herb. Radcliffe, teste J. E. Little].

Ruscus aculeatus L.—Common near Freshwater; sparingly in E. Wight.

Asparagus officinalis L.—Still at Norton Spit.

Allium vineale L.—Abundant at Freshwater, where it rarely flowers; var. compactum (Thuill.)—E. Medina.

A. triquetrum L.—In hedge-bank at Middleton; status doubtful.

A. ursinum L.—Swainstone, Luccombe; stated in Nat. Hist. to be not uncommon; it is decidedly rare in W. Wight; [Northwood Church, May 16th, 1838, in Herb. Radcliffe, teste J. E. Little].

Scilla autumnalis L.—Still at St Helens; with blue, pink and white flowers.

Narthecium ossifragum Huds.—Sandown.

Juncus bufonius L., var. ranarius Song. & Perrier—Freshwater, Alverstone.

J. squarrosus L. [Bleak Down, June 1842, in Herb. Radcliffe, teste J. E. Little]; still there.

J. Gerardi Lois.—Freshwater, Cranmore, St Helens, etc.

J. effusus L.—Abundant; var. compactus Lej. & Court.—Headon Hill, Alverstone, etc., common; probably often mistaken and recorded for *J. conglomeratus*.

J. conglomeratus L.—Cranmore, Haven Street, etc. Probably all previous records need revising, as this plant has been much confused in Herbaria with *J. effusus*, var. *compactus*. The figure of *effusus* in Butcher and Strudwick and the note tend to perpetuate the confusion. Var. laxus A. & G.—Haven Streen.

J bulbosus L., var. fluitans Lam.—Alverstone, Haven Street.

J. obtusiflorus Ehrh. (J. subnodulosus Schrank)—Totland.

J. articulatus L. (J. lamprocarpus Ehrh.), var. fluitans Koch—Moon's Hill.

J. acutiflorus Ehrh. × subnodulosus—Freshwater.

Luzula pilosa Willd.—Not common; Freshwater.

L. Forsteri DC.—Common in the N. of the Island.

L. silvatica Gaud.—Beckett's Copse, Newchurch.

L. multiflora DC.—Wooton, Haven Street, etc.; [with its variety—congesta (Lej.) (as campestris), Cockleton Bog, July 1839, in Herb. Radcliffe, teste J. E. Little].

L. campestris DC.—Common; var. congesta Syme—Afton.

Sparganium ramosum Curt. (S. polyedrum A. & G.)—Freshwater.

S neglectum Beeby—Newport, Whippingham.

S. simplex Huds.—Sandown, Brading.

Ruppia maritima L. and R. rostellata Koch—Both at Newtown.

Alisma Ranunculoides L.—Norton; [Ditch at Freshwater, August 1838, in Herb. Radcliffe, teste J. E. Little].

Butomus umbellatus L.—Still at Freshwater.

Cyperus longus L.—Near Carisbrooke, 1922 and onwards; [Apes Down, Swainstone, September 30th, 1839, ex. herb. J. B. Wood, Manchester, in Herb. Radcliffe, teste J. E. Little].

Scirpus Savii Seb. & Maur. (S. filiformis Savi)—Compton, Newchurch, St Helens.

S Tabernaemontani Gmel.—Thorley, Cranmore, etc.

S maritimus L., var. compactus Hoffm.—Freshwater, Norton, Thorley, Brading; var. macrostachys Visiani—Freshwater.

S. silvaticus L.—King's Quay, Alverstone.

Eriophorum angustifolium Roth—Freshwater; var. elatius Koch—Chale.

E. latifolium Hoppe—[Cockleton Bog, 1839, in Herb. Radcliffe, teste J. E. Little].

Panicum lineare Krocker—Newport.

P. sanguinale L.—Newport.

P Crus-galli L.—Newport, Ryde; var. longisetum Döll—Newport.

Setaria viridis Beauv.—Moon's Hill frequent, Newport, Cowes; var. majus (Gaud.) Koch—Newport; var. Weinmanni R. & S.—Newport.

S. glauca Beauv.—No record in Nat. Hist. since 1869; Newport 1928.

S verticillata Beauv.—Medina Valley below Newport.

Spartina stricta Beauv.—Becoming very scarce; Norton Spit 1913, not seen recently; Newtown, Medina Valley.

Phalaris canariensis L.—Frequent in waste ground.

P. minor Retz.—Newport.

P. paradoxa L.—Newport, once only; var. praemorsa Coss. & Dur.—Common on waste-ground at Newport, c. 1916-17.

Anthoxanthum odoratum L.—Common; var. villosum Lois.—Moon's Hill; var. longiaristatum Celak.—Moon's Hill.

A. aristatum Boiss. (A. Puelii Lecoq & Lamotte).—Medina Valley below Newport.

Alopecurus bulbosus Gouan—Freshwater, Yarmouth; [Marsh by Yarmouth, c. 1838, in Herb. Radcliffe, teste J. E. Little].

Phleum pratense L., var. nodosum (L.)—Freshwater.

P. arenarium L.—Still on Norton Spit.

Agrostis setacea Curt.—Heathy places, Haven Street, Sandown, etc.

A alba L., var. maritima Meyer—Totland, Freshwater.

A. vulgaris With. (A. tenuis Sibth.), var. pumila (L.)—High Down, Norton, etc.

A nigra With. Moon's Hill.

Polypogon monspeliensis Desf.—Medina estuary on several occasions. No record in Nat. Hist. since 1868.

Calamagrostis epigeios Roth—Not uncommon in the N.E. of the Island.

Gastridium lendigerum Gaud.—Frequent; Moon's Hill, Yarmouth, Wooton, Ryde; [Between Freshwater and Yarmouth, Dr Bromfield, September 1844, in Herb. Radcliffe, teste J. E. Little].

Apera Spica-venti Beauv.—Newport, Cowes.

Aira caryophyllea L., var. multicaulis (Dum.)—Cranmore.

Arrhenatherum tuberosum Gilib. (A. elatius Mert. & Koch, var. bulbosum Presl)—High Down, etc., etc., abundant.

Cynodon Dactylon Pers.—Newport, now lost.

Phragmites communis Trin., var. repens Meyer—Totland, Chale; var. subuniflora Druce—Norton; var. densior Druce—abundant at Thorley.

Cynosurus echinatus L.—Freshwater, Newport, Northwood.

Dactylis glomerata L., var. congesta G. & G.—Freshwater and Afton Downs, Grange Chine, Chale, Haven Street.

Briza minor L.—Whippingham 1918, not seen since.

Poa bulbosa L.—Still at St Helens.

P. pratensis L., var. subcaerulea (Sm.)—Freshwater Downs, Newport.

P. nemoralis L.—Freshwater, Newport, Ventnor.

P. compressa L.—Still at Apes Down and Shide.

Glyceria distans Wahlb.—Freshwater, Newport, St Helens.

G. Borreri Bab.—In several places by the sea; Freshwater, etc.; [Meadows at Freshwater Gate, June 21st, 1841, Dr Bromfield in Herb. Radcliffe, teste J. E. Little].

Festuca rottboellioides Kunth—High Down, Steephill.

F. uniglumis Soland.—Still at St Helens.

F. ambigua Le Gall—Still at St Helens.

F. Myuros L.—Whippingham, Sandown.

F. bromoides L.—By no means common as stated in Nat. Hist.; St Helens.

F. capillata L.—Haven Street.

Bromus erectus Huds.—Moon's Hill, Ashey Down; [Luccombe, July 1840, Dr Bromfield in Herb. Radcliffe, teste J. E. Little].

B. madritensis L.—Newport.

B. maximus Desf.—Newport, Ventnor.

B. secalinus L., var. velutinus (Schrad.)—Newport.

B. commutatus Schrad.—Haven Street.

B. hordeaceus Fries, var. nanus Druce—Cliffs as Freshwater, Afton, Compton; inflorescence often reduced to one spikelet only.

B. arvensis L.—Bleak Down.

Lolium perenne L., var. tenue Syme—High Down, Moon's Hill, Newport.

L. remotum Schrank (L. linicola Sonder)—Newport.

L. temulentum L.—Norton, Newport, Cowes; var. arvense (With.)—Newport.

Agropyron repens Beauv., var. dumetorum (Hoffm.) S. F. Gray—Freshwater; var. glaucum Döll—Freshwater.

A. pungens R. & S.—Yarmouth; var. littorale (Reichb.)—Newport; var. pycnanthum G. & G.—Norton Spit, Bembridge; var. aristatum Hack.—Newport.

SOME ALIEN PLANTS OF THE ISLE OF WIGHT.

J. W. Long.

The following plants of more or less casual occurrence are not included in *The London Catalogue of British Plants*, 11th edition, but, with a few exceptions, the names appear in the *British Plant List*, 1928. The nomenclature and arrangement of that work have been taken as a guide.

Sisymbrium Loeselii L.—Waste ground by Medina, 1927.

Brassica juncea Coss.—Between Newport and Cowes, on several occasions.

Eruca sativa L.—Numerous plants at Newport, 1925. Several at Cowes in the same year.

Lepidium perfoliatum L.—A small colony at Newport in 1924. Not seen since.

L. virginicum L.—Waste land near Cowes, 1927.

L densiflorum Schrad.—Between Newport and Cowes, on several occasions.

Neslia paniculata Desv.—Waste ground, Newport.

Rapistrum rugosum (L.) All.—On cliffs at Ventnor; near Mill, Carisbrooke; Newport.

Lavatera thuringiaca L.—Waste ground, Newport, 1928.

Abutilon Avicennae Gaertn.—River-side, Newport.

Hibiscus Trionum L.—Football field, Newport.

Lupinus angustifolius L.—Waste land below Newport.

Trigonella Foenum-graecum L.—Near corn-mill, Newport.

T. corniculata L.—Waste ground, Newport, 1925.

Melilotus sulcata Desf.—Plentiful for a year or two near Newport, but it gradually disappeared.

Trifolium tomentosum L.—River-side, near Newport.

Astragalus boeticus L.—Waste ground, Newport.

Coronilla Scorpioides Koch—Sea Close, Newport.

Cicer arietinum L.—Waste ground, Newport.

Vicia tenuifolia Roth—Totland.

V. pannonica Crantz—Totland.

V. peregrina L.—Sea Close, Newport.

Lathyrus Ochrus L.—River-side, below Newport.

Dipsacus fullonum Mill. First seen in a cornfield near Pan Mill, Newport, 1913. Each year since as a waste ground plant at Shide, Newport, or Cowes.

Erigeron mucronatus (DC.) Asch.—Shide.

Ambrosia artemisiaefolia L.—Has persisted for several years near Flour Mill, Newport.

Xanthium Strumarium L.—Waste ground near Cowes; near Flour Mill, Newport.

SPILANCHES DECUMBENS (Sm.) Moore, var. LEPTOPHYLLA (DC.) Moore—Waste ground, Shide.

GUIZOTIA ABYSSINICA Cass.—Occurs frequently as a waste ground plant at Ryde, Shide, Newport and Cowes.

HEMIZONIA PUNGENS Torrey & Gray—Several plants on reclaimed ground, Newport.

TAGETES MINUTA L.—On river-mud below Newport.

ANACYCLUS MEDIANS Murb.—Waste ground, Newport.

CENTAUREA MELITENSIS L.—Waste ground, Newport and Cowes.

CARTHAMUS TINCTORIUS L.—Allotment ground, Ryde; reclaimed land between Newport and Cowes—of frequent occurrence.

C. TINCTORIUS L., var. INERMIS Schweinf.—Newport.

UROSPERMUM PICROIDES F. W. Schmidt—Newport.

ECHINOSPERMUM LAPPULA Lehm.—On several occasions at Sea Close, Newport.

SOLANUM ROSTRATUM Dun.—Football field, Newport, 1926.

NICOTIANA RUSTICA L.—Abundant one year on cinder-covered waste near Cowes.

SIDERITIS MONTANA L.—Sea Close, Newport.

DRACOCEPHALUM PARVIFLORUM Nuttall—Mud-bank below Newport.

PHYSOSTEGIA VIRGINIANA Benth.—Waste ground, Newport.

AMARANTHUS CHLOROSTACHYS Willd.—Allotment gardens, Ryde.

A. ALBUS L.—Newport, 1931.

A. VIRIDIS (auct.)—Named at Kew. Waste ground, Newport, 1925.

A. HYBRIDUS L.—Growing with mangel-wurzel in arable field at Sandown, 1930.

ROUBIEVA MULTIFIDA Moq.—Allotment gardens, Ryde, 1924.

CORISPERMUM HYSSOPIFOLIUM L.—At base of railway embankment, Ryde.

POLYGONUM BELLARDI All.—Waste ground, Newport; in fair quantity for several years.

P. PULCHELLUM Loís.—Sea Close, Newport.

P. COGNATUM Meisn., var. ALPESTRE (C. A. Mey)—Football field, Newport, 1931.

P. AMPLEXICAULE D. Don—Cliff-face, Shanklin.

FAGOPYRUM TATARICUM (L.)—Sandown, Ryde, in allotment gardens.

RUMEX SALICIFOLIUS Weinm.—On railway embankment and waste ground near Newport, in varying quantity for several years. Not seen in 1931.

R. BUCEPHALOPHORUS L.—Several plants at Sea Close, Newport, 1927.

R. DENTATUS L.—Plentiful on gravelly waste near Newport for several years. It did not survive the colder winter of 1929.

CANNABIS SATIVA L.—Waste ground at Ryde, Shide, Newport and Cowes.

HELXINE SOLEIROLII Req.—Apparently quite established in the turf at Bonchurch churchyard and at Totland.

ASPHODELUS FISTULOSUS L.—Waste ground, Newport and Cowes.

PANICUM MILIACEUM L.—Waste ground, Newport, Cowes and Shide. Var. NIGRICANTE Dr.—Newport.

P. CAPILLARE L.—Between Newport and Cowes.

P MAXIMUM Jacq.—In fair quantity at Newport in 1924; less plentiful at Ryde and Shide; none seen after 1925.

SETARIA ITALICA (L.) Beauv.—River-bank, Cowes.

SORGHUM HALEPENSE (L.) Pers.—Waste land, Cowes, in fair quantity for two years.

GAUDINIA FRAGILIS (L.) Beauv.—Several vigorous patches in pasture land west of Ryde in 1917. A few plants in hedgebank and by roadside, 1931.

BROMUS UNIOLOIDES H. B. K.—River-bank below Newport for several years; in fair quantity on waste land near Cowes, 1928-1931.

HORDEUM JUBATUM L.—Waste land, Newport, for several years.

ELYMUS CAPUT-MEDUSAE L.—Several plants at Sea Close, Newport, 1928.

SOME BRITISH RUBI, NEW AND OLD.

Wm. Watson.

Rubus villicaulis Koehl. and R. insularis Aresch.

Considering that it is a widespread bramble in S.E. England and ranges across the Continent to the confines of Russia, it is strange that *R. villicaulis* should have remained almost unrecognised and unrecorded from the south-eastern counties. It is said in the *Handbook* to be abundant in Scotland, fairly frequent in the west of England and in Wales, but not known east of Staffs and Dorset, with the possible exception of Surrey and N. Lincs.

In my experience *R. villicaulis* is a fairly frequent bramble in Surrey and S. Essex, and I have also seen examples from S. Hants, W. Kent, Berks, Oxon, Bucks, and S. Lincs. Specimens of *R. villicaulis* from these counties sent to our authorities for naming have been variously assigned by them as follows: examples from S. Hants, Berks, Oxon, and Bucks as "*R. Schlechtendalii*," another example from Berks as "under *R. incurvatus*," and another as "*R. leucostachys* × *Lindleianus*," and yet another as "*R. macrophyllus*." A South Essex specimen of *R. villicaulis* was claimed to be "*R. dumnoniensis* Bab., forma, record for v.-c. 18," and strong examples from Surrey were described as a new bramble and named "*R. rhombifolius*, var. *megastachys*."

The confusion seems to date from 1897, when, according to Rogers writing in the *Journal of Botany* for that year, having sent Focke Scottish plants labelled "*R. villicaulis* Koehl., var. *insularis* (F. Aresch.), or form near it," he received the reply, "The form called *R. insularis* Aresch. is the true typical *R. villicaulis*, first described from Silesia, E. Germany." This view, which cannot be upheld and in his last work was relinquished by Focke, was adopted in the *Handbook*, and a specimen of *R. insularis* was sent out in the Set of British Rubi to represent *R. villicaulis*. As a consequence *R. insularis* has in this country most often received the name *R. villicaulis*, whilst when the true *R. villicaulis* has been before them, our authorities have generally been at a loss for a name. As regards the identity of the plant of the west of England and Wales, it may be sufficient to refer to the specimens collected in Radnorshire in 1898 by Ley and Rogers and distributed to members of this Club as "*R. villicaulis*." They belong really to *R. insularis*.

Lindeberg described a new species near to *R. insularis* as *R. confinis*, and this receives a full description in Areschoug's book *Some Observations on the Genus Rubus*, Vol. I., under the name of *R. insularis*, sub-sp. *confinis*. A specimen labelled "S.M. Macvicar, 22.7.1894. Moidart, Inverness. *R. villicaulis*—W.M.R." is, it appears to me, *R. insularis*, sub-sp. *confinis* (Lindeb.).

R. RECTANGULATUS Maass.

This is a North German bramble which will be found described as a species distinct from *R. villicaulis* in Maass's account of the *Rubi* of N.E. Germany, contributed to Ascherson and Graebner's *Flora des Nordostdeutschen Flachlandes*, and is the bramble referred to in the *Handbook* as the common *R. villicaulis* of N.W. Germany. It occurs in Devon, Dorset, and in Bucks. In Dorset it was seen growing by Focke and was referred by him to *R. rhombifolius*, whilst Murray, who showed it to him, thought it was *R. stereacanthus* P. J. Muell. See *Rep. B.E.C.*, 1893. The Bucks plant was named "*R. argentatus*. Record for v.-c. 24" by Rogers.

The veteran Danish bramble-kenner, Mr K. Friderichsen, informed me a short time ago that *R. stereacanthus* P. J. M. was the same species as *R. atrocaulis* P. J. M., *R. Langei* Jensen, and *R. rectangulatus* Maass. Murray's determination of the Dorset bramble as *R. stereacanthus* would thus be equally correct with *R. rectangulatus*. *R. Langei* appears to be the forma *umbrosa*, and *R. stereacanthus* and *R. atrocaulis* the forma *aprica*. I have seen a specimen of *R. rectangulatus* gathered and named by Maass, but no example of the other forms I have quoted. On that account I retain Maass's name for the present, although *R. atrocaulis* is the earliest published. Sudre records *R. atrocaulis* for Yorkshire.

R. INCARNATUS P. J. Muell.

There seem to have been two distinct brambles represented in the specimens issued by Schultz as *R. incarnatus*. Boulay treats *R. incarnatus* as a synonym, and Focke as a race, of *R. villicaulis*; whilst Boulay states that he has also seen a more *Godroni*-like bramble issued by Schultz as *R. incarnatus*. This second bramble accords better than the first with Mueller's description, and it is the one illustrated and described by Sudre as Mueller's plant.

In 1905 Sudre distributed specimens of *R. incarnatus* which had been collected and identified by Mueller, and pointed out the differences from *R. villicaulis*. In Mueller's original description (*Versuch*, No. 28) he describes the nearly ovate-deltoid finely toothed terminal leaflets, with very entire base, completely glabrous above and greenish-grey to white felted beneath, and the not very large, unequal, curved prickles and nearly white-felted upper leaves in the panicle. The long patent prickles on the stem caused Mueller at first to identify this bramble with *R. macroacanthus* W. & N. The rachis bears large tufted, as well as paired, and short stellate hairs. The flowers are holerythrine. Mueller says that it is one of the last brambles to flower.

I consider that I have seen *R. incarnatus* P. J. Muell. from Tubney and Bladon (Oxon), Brickhill and Ivinghoe (Bucks), and Market Rasen Wood (Lincs). The Bladon and Ivinghoe specimens are named "*R. thyrsoideus*" by Rogers, the Ivinghoe specimens being claimed as a new county record for *R. thyrsoideus* for Bucks, but he was less certain of the others. The Tubney specimens he reported on as follows. "I do not see how this can be kept from *R. dumnoniensis* Bab., though I have never seen that before with the leaflets so acuminate or stem so nearly glabrous." The Brickhill specimen was named *R. incurvatus* by Focke, and Rogers remarked, "may be a form of *R. incurvatus*, but I cannot quite match it."

R. incarnatus finds its proper position, as Sudre places it, amongst the *Argentei*, not amongst the *Villicaules*.

R. PUBESCENS Weihe.

The true plant appears not to have been known to Rogers from Great Britain, at any rate at the time of publication of the *Handbook*. It was, however, gathered by Mr Cumming in 1913 near Kilsby Station in Northants (as *R. thyrsoideus*); and again by R. W. Robbins in a hedge at Brimpton, Berks, in 1928.

R. pubescens has a narrow terminal leaflet, broadest close to the rounded, entire base, and gradually narrowed upwards into a long point. All the leaflets are exceptionally long-stalked and as a result stand far apart. These characters taken in conjunction with the considerably hairy stem, the large-based strongly hooked prickles in the middle of the flowering branch, and the large and handsome white flowers with their great show of long and spreading stamens, followed by an abundance of large subglobose fruits, will prevent confusion with any other plant which has been mistaken for it.

R. HEREFORDENSIS Sudre.

The Herefordshire examples gathered by Ley and issued in the Set of British Rubi to represent *R. pubescens* Weihe were subsequently in the *Handbook* acknowledged not to be Weihe's plant. A specimen of the same bramble collected in 1894 by Ley at Belmont, Heref., as "*R. lasioclados* Focke?" was thought by Rogers to be "Surely nearer to *R. pubescens* and *R. argentatus* than to *R. lasioclados*," whilst Focke simply named it "*R. argentatus* P. J. Muell." Another specimen, collected by Ley in 1904 on Wenlock Edge as "*R. lasioclados*," was passed by Rogers as "very close to the Paddlesworth, Kent, plant, especially in the panicle. New county record."

I have seen this bramble of Ley's growing in Herefordshire at Howle Hill, Ross, in Cowleigh Park, Malvern, and near Yatton. The specimens for the Set came from Caplar. I do not know of it outside Herefordshire except on Wenlock Edge. The bramble is neither *R. pubescens*, nor *R. lasioclados*, nor *R. argentatus*; and Sudre was the first to see this and to describe it, giving as good a description of it as was practicable from a dried specimen not accompanied with collector's notes. To supplement his description my notes made from the living plant are transcribed here.

Stem glaucescent, greenish-grey to reddish-brown, obtuse-angled with sides flat and striate, with numerous sessile glands, not many pricklets, acicles or stalked glands, but an abundance of patent and short adpressed clustered hairs. Prickles declining or falcate, yellow to purplish, moderately numerous, slender. Leaves large, pedate, subglabrous above, closely and densely white felted, and more or less pubescent and hairy beneath; petiole and petiolules with numerous hooked prickles and clothed like the stem; terminal leaflet broadly obovate, broadly acuminate-cuspidate, base subcordate to subentire, with broad, unequal, more or less doubly-serrate teeth.

Flowering branch obtuse-angled, villose throughout, with sunken stalked glands, and weak yellow or purplish declining or falcate prickles. Panicle pyramido-cylindrical, with a domed top and 3-7-flowered middle branches, often containing 1-2 large ovate leaves; terminal leaflet of 3-nate leaves oval, acuminate; bracts linear, foliaceous. Buds grey felted, pubescent and glandular, segments white-edged, ending in linear tips when strong, loosely reflexed after flowering, a few patent, very white within. Petals suborbicular or ovate, suddenly clawed, rose pink. Stamens pink (reddening) much longer than the pink (sometimes green) styles. Anthers and young carpels glabrous.

RUBUS HIRTIOR nov. spec.

Study of further and better material of Sudre and Ley's *R. hirsutissimus* convinces me that it differs from the common Surrey bramble described under that name in *Rep. B.E.C.* for 1927. I therefore propose a new name, *Rubus hirtior*, for the Surrey bramble. The following description is based on a plant growing at Netley Heath, Surrey.

Turio arcuata-procumbens vel scandens obtusangulus faciebus planis striatisque glaucescens pilis divergentibus dense obductus glandulis et aciculis rarioribus instructus. *Aculei* parvi vel mediocris subinaequales e basi compressa subulati plerique patentes. *Folia* ternata et quinato-pedata utrinque viridia supra strigosa subtus imprimis in nervis pilis micantibus subvelutina marginibus inaequaliter (apicem versus saepe duplicato-) serrata, petiolo supra leviter impresso aculeis falcatis munito; *foliola* omnia contigua lata acuta vel breviter acuminata, *terminale* suborbiculare basi ± cordata deorsum modice angustatum, *infima* longe petiolulata.

Ramus florens viridis teretiusculus turionis ad instar indutus et aculeis gracilibus armatus. *Inflorescentiae* elongatae usque (vel tantum non) ad apicem foliosae inferne interruptae ramuli intermedii breves subascendentes cymoso-partiti tomentoso-villosi aciculis glandulisque raris praeter aculeos tenues muniti. *Flores* mediocres; *petala* elliptica abrupte in unguem brevem contracta ascendentia incurva, in alabastro dilute rosea deinde alba plicatula; *stamina* alba stylos virentes fere aequantia (raro paulo superantia); *sepala* cano-virenti-tomentosa post anthesin patula vel laxe reflexa; *germina* glabra.

Crescit in ericetis atque in silvis regionum meridionalium comitatus Surreiae. *Typum* in herbarium proprium deposui.

[Ref. No. 2051], Witley, Surrey, July 6, 1897, E. S. Marshall as *R. leucanthemus* P. J. M. ?; [Ref. No. 1005], Walton Heath, Surrey, July 13, 1923, W. C. Barton and H. J. Riddelsdell as *R. leucanthemus*? P. J. M.; Lockinge, Berks, 1895, G. C. Druce, det. by W. M. Rogers as *pyramidalis* Kalt.

Rubus nitidioides W. Watson.

Three years ago I described a bramble under the above name in these Notes. It has now been found in four Watsonian vice-counties, in more than one river system, and seems not to have been described abroad. I therefore now give a Latin description, embodying my further observation of the plant, wild and under cultivation. It should stand among the *Grati* in the *Silvatici*.

Turio suberectus subsimplex raro unquam radicans obtusangulus faciebus planis superne vix sulcat's e viridi ochraceus deinde ruber aut saltem rubro-maculatus parce pilosus eglandulosus auctumno frondifluus. *Aculei* crebi duri plerique reclinati. *Folia* plicata margine parum undulata sat grosse serrata supra glabrescentia subtus pubescentia et breviter pilosa, petiolo inferne sulcato aculeis crebris uncinatis armato, stipulae eglandulosae late lineares; *foliola* mediocria apice acuta vel late acuminata, *terminale* ovale basi semper fere integro, *infima* breviter sed manifeste petiolulata.

Ramus florens inferne glabrescens superne pubescens parce pilosus eglandulosus foliis concoloribus nonnullis quinatis munitus. *Inflorescentiae* pyramido-corymbosae laxe compositae aculeis curvatis armatae ramuli supremi (1-7-flori) florem terminalem evidenter pedicellatum saepe longe superantes, inferiori longe pedunculati subcorymbosi foliosi erecto-patentes; pedicelli aculeis crebris falcatis intense flavis muniti. *Calyx* viridis nitidus subglaber sepala obtusa interdum foliaceo-appendiculata margine tomentosa anthesi peracta primum laxe reflexa deinde patula postremo verum sub fructu maturo erecta. *Flores* majusculi; *petala* ovalia longa dilute lilacina ascendentia incurva; *stamina* alba vel roseola inaequalia, quorum longiora stylos virentes paulo excedent; *germina* glabra; *carpophorum* elongatum pilosum. *Fructus* magni bene evoluti oblongi e drupeolis inaequalibus compositi.

Incolit loca uda in ericetis silvisque apertis, stagnorum et rivulorum ripas, etc. *Typum* in herbarium proprium deposui.

Planta vulgo sat robusta, in solo uberi optime vigens; hinc inde verum cum forma normali occurrit forma minor quae primo visu *Rubum nitidum* valde revocat.

Rubus apricus Wimmer.

This bramble, which was reported in these Notes in 1927 to grow on Chislehurst Common, W. Kent, has now been found on Wimbledon Common by Mr C. Avery. Focke states that he has seen specimens from Surrey exactly like Wimmer's plant, but he did not state the locality and the new Surrey *Flora* gives none either. Given suitable conditions *R. apricus* grows into a large bush with magnificent cymose-branched panicles, revealing its relationship with *R. Koehleri* in spite of its erect fruit-calyx.

Mr Friderichsen informs me that he has found this large form himself in the South of Sleswick and points out that Wimmer's type is a *forma parvifolia.* He has therefore named the large plant var. *sub-*

calvatus. Sudre records *R. apricus* for Belgium. We appear to have it therefore in common with the adjacent parts of the Continent.

R. RHOMBOPHYLLUS M. & L.

This pink-flowered bramble, belonging to the large *R. obscurus* group, occurs, if it is correctly identified, in the Forest to the west of Canterbury. The "*R. uncinatus*" found at Mop End, Amersham, in Bucks, appears to be *R. rhombophyllus* also.

The stem is angled and hairy and is armed with declining unequal prickles, grouped often in twos and threes, and is furnished with short-stalked glands and acicles much as in *R. radula.* The leaves are quinate-pedate, glabrous above, and softly grey-felted and hairy at first beneath, but later glabrescent; the terminal leaflet is obovate-rhomboid, simply but unevenly not very deeply serrate-dentate; the petiole with hooked prickles.

The panicle is elongate, leafy to the top, densely patently pilose; the prickles much declining and falcate, slender, long and unequal, accompanied with rather numerous stout-based pricklets. The sepals are loosely reflexed after flowering; the petals are pink, and the stamens and styles are sometimes pink and sometimes green.

R. rhombophyllus being a glabrescent plant, it is possible that *R. cinerascens* Weihe, which was found by Lejeune in Belgium and is stated by Sudre to be very like *R. rhombophyllus* only not so densely hairy, may prove to be the same plant. *R. rhombophyllus* is known from several stations in the Paris basin.

R. THYRSIFLORUS Weihe.

A bush on Putney Heath, situated in the open, last year made strong stems which became suffused in autumn with deep violet, exactly as shown in Weihe's plate. The character is a useful one for the recognition of the plant, so long as it does not lead to confusion with *R. melanodermis,* which also grows on Wimbledon Common.

RUBUS LARGIFICUS W. Watson.

This was described as a new species in *Rep. B.E.C.*, 1927. I found it first in 1922 in several stations in N.W. Kent on the Tertiary tableland, and afterwards on one of the highest parts of the North Downs, which fact led me to think it was an old form that would be found elsewhere and might be recognised if it were described. In 1930 it was met with again in some plenty in the centre of the Weald, around Tunbridge Wells. As it appears worthy of adoption into the British list of plants, and I have still found no Continental plant or description matching it, a Latin description is now given incorporating one or two fresh characters useful for its determination.

Vepres vigorosus largiter fructifer sempervirens. *Turio* ex arcu humili procumbens inferne hispidus viridis teretiusculus superne obtusangulus faciebus sulcatis purpurascens tomentoso-villosus aculeolis et glandulis crebris et setis glanduliferis sparsis instructus. *Aculei* mediocres declinati. *Folia* quinata crebriora plicata in sole rugosa subcoriacea supra glabra subtus canescenti-virentia in nervis prominulis micanti-pilosa; *foliola* omnia basi subcordata, *terminale* obovato-oblongum mediocriter inaequaliter et apicem versus sat duplicato-vel parte patenti-serratum.

Inflorescentiae laxae anguste pyramidalis obtusae inferne interruptae ultra medium foliosae ramuli medii racemosi 2-3-flori fere patentes; folia suprema simplicia supra glandulis purpureis conspicuis inspersa; flos terminalis subsessilis. *Rachis* angulosa robusta rigida cum pedunculis et pedicellis aculeis debilibus et glandulis stipitatis instructa, quarum pars major in villis submersae. *Flores* parvi; *petala* obovata alba ungue lato lutescente; *stamina* alba erecta stylos basi rubentes subaequantia vel interdum longe excedentia; *sepala* attenuata pallide tomentosa in anthesi reflexa postea patula deinde erecta tum denique sub fructu maturo rursus reflexa. *Germina* pilosa; *fructus* magni subglobosi.

In ericetis et ad margines silvarum. *Typum* in herbarium proprium deposui.

R. SPINULIFER M. & L.

This bramble Focke puts under *R. Koehleri* as a vaguely defined form with variable characters, presumably on account of the supposed discrepancies which he quotes between Boulay's description and Mueller's description. If Mueller's description is referred to, however, one sees that it is identical with that of Boulay in those particulars which Focke mentions. Evidently Focke has by inadvertence quoted from Mueller's description of *R. acutifolius* (page 212) instead of from his description of *R. spinulifer* (page 214). No discrepancy therefore exists, and there is no proof that *R. spinulifer* is variable or that it is vaguely defined. On the contrary it seems a particularly well marked, and (when once known) readily recognised species.

RUBUS RADULA, sub-sp. ASPERICAULIS (L. & M.).

A bramble which grows in several widely-separated localities in Kent is distinct from all the *Radulae* described in the *Handbook* and matches very well a specimen which I have seen of *R. aspericaulis* L. & M., collected and named by Questier. It is rather closely related to *R. radula* itself, and would stand as a sub-species to it in any classification which admits sub-species.

The Kentish plant has the stem robust, low-arching and then procumbent, glaucous green at first but changing to ochreous and light reddish brown, slightly pilose, angled with flat or rather concave sides, bearing many short and equal stalked glands, acicles and pricklets. Prickles with strong ochreous bases, mostly patent, a few declining and recurved. Leaves large, 3-4-5-nate and incompletely 4-nate and 5-nate, on the flowering branch as well as on the barren stem. Terminal leaflet broadly ovate or obovate, suborbicular or reniform, acute or shortly acuminate-cuspidate, the base subentire or subcordate, irregularly or rather doubly finely serrate-dentate; strigose above, at first white felted beneath then green. Petiole sulcate, armed with hooked prickles.

Panicle narrowly pyramidal, lax and short, possessing 1-2 large ovate leaves followed by linear-lanceolate subfoliaceous bracts and bracteoles. Rachis green, closely patently pilose, together with the pedicels bearing numerous short fine yellowish patent (on the rachis unequal and irregularly distributed) prickles and acicles, and short-stalked glands. Branches of the panicle 2-3-flowered, divided almost to the base. Petals pinkish to nearly white, oval, remote crumpled, with margins and apex erose, incurved. Stamens white, longer than the deep crimson styles. Sepals triangular attenuate, very white within, finely aciculate and sprinkled with stalked glands, reflexed in flower and fruit. Young carpels subglabrous. Fruit broadly ovoid or subglobose, composed of rather few but large drupelets.

In some few slight respects our plant differs from the French type, and I therefore distinguish it as a variety as follows.

Var. CANTIANA nov. var. A typo recedens foliis evidenter pedatis supra strigosis, foliolis basi magis cordatis, inflorescentiae ramulis fere ad imum partitis, petalis quae e roseolo mox albicant, denique stylis saturate purpureis.

I have met with the plant at Hayes, Chislehurst, St Mary Cray, Malling, Teston, Bigberry, and Harbledown in Kent.

BRIT. MUS. (N.H.)
BOTANY

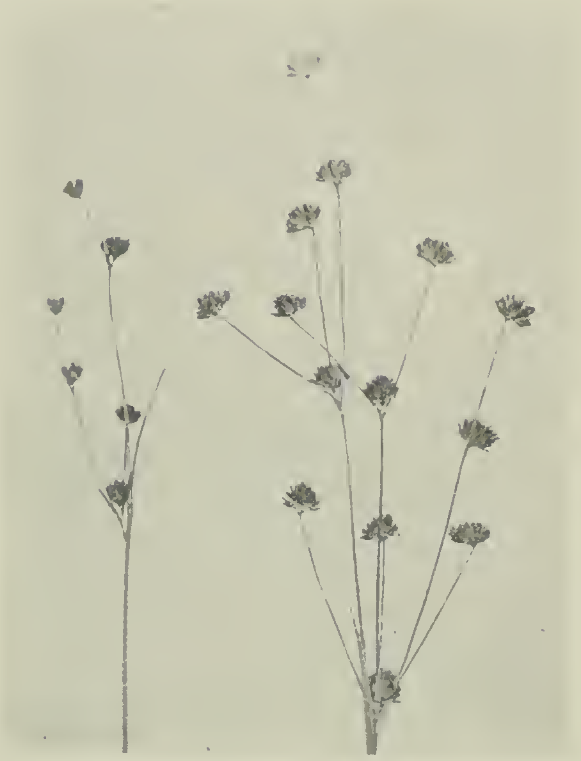

Fig. 1. *Juncus alpinus* Villars, from Widdy Bank, Durham, England, to the left and from Enskede by Stockholm, Sweden, to the right.

INVESTIGATION INTO NORTH-WEST EUROPEAN JUNCUS ALPINUS FORMS.

DR BERTIL LINDQUIST.

These studies are concerning the species *J. alpinus* Villars, *J. anceps* Laharpe, *J. atricapillus* Drejer, *J. fuscoater* Schreber, *J. nodulosus* Wahlenberg, *J. Marshallii* Pugsley and *J. alpestris* Hartman. My investigation will be published *in extenso* in a Swedish paper. There are, however, several problems of special interest to English botany so, when Dr Druce invited me to give him a summary of my studies for his Report, I very gladly consented.

J. ALPINUS Villars.

When Villars in 1787 described *J. alpinus* he identified it with Haller's *Juncus foliis fistulosis, articulatis, panicula simplici, glumis aristatis* (Haller 1768) and with Scheuchzer's *Juncoides alpinum folio articulato* (Scheuchzer 1719). It may, therefore, be of some interest to inspect these forms described by Haller and Scheuchzer.

Haller's *Juncus foliis fistulosis*, etc., belongs to the *articulatus*-group and seems to be a rather low form. It has a simple panicle with up to six 1-2-flowered umbels. The perianth segments have a chestnut-coloured margin and are mucronulate: " longo mucrone ut aristata dici possint." Although the description is fairly detailed, it affords very little evidence to prove that Villars' *J. alpinus* is identical with Haller's *Juncus foliis fistulosis*, etc. Against this supposition goes Haller's detailed description of the perianth segments which are most likely to be taken as characteristics for a *J. lampocarpus*-like form. I do not think we can justifiably assume this Juncus, as described by Haller, to be identical with what is now called *J. alpinus* Villars.

Scheuchzer's description of *Juncoides alpinus folio articulato* on the whole agrees well with Haller's above-mentioned forms. Scheuchzer's type is also articulate and the panicle is slightly branched and simple. The flowers, the length of which he states to be 2.5 mm. or a little more, are placed two or three together in small umbels and terminate in a pointed thin mucro. This description does not fully distinguish what it is intended to describe: the size of the flowers (as well as their number in the umbels) seems to point to *J. alpinus* Villars, whereas the observation that the flowers end in a pointed mucro indicates rather that some *J. lampocarpus*-form might have been in the author's mind.

In subsequent investigations, therefore, it is no doubt advisable not to attach undue importance to references to the above-mentioned descriptions by Haller and Scheuchzer in the identification of *Juncus*-species and *Juncus*-forms.

Sprague (1928) has, however, pointed out, that already in the first volume of Villars' *Histoire des Plantes de Dauphiné* (1786, p. 378) Chaix published a description of a *Juncus alpino-articulatus*, which seems to be identical with the *J. alpinus* described by Villars himself in the following year. Chaix refers to Haller 1321, *i.e.*, to *Juncus foliis fistulosis, articulatis, panicula simplici glumis aristatis* but gives no further description to the plant. Sprague now points out that the reference to Haller may be considered sufficient to show that the plant described by Chaix is identical with Villars' *J. alpinus* and Chaix's name, being one year older than that of Villars', he considers that *J. alpino-articulatus* Chaix ought to replace *J. alpinus* Villars. This consideration has since been accepted by Druce (1931) and Pugsley (1931). One objection to Sprague's name *J. alpino-articulatus* is that the only definite attribute Chaix has given *J. alpino-articulatus* is the reference to Haller 1321. It is probably not advisable to base an identification of Chaix's species merely on the reference to an author who in his nomenclature is pre-Linnean; all the more so as Haller's diagnosis, quoted by Chaix, might rather refer to some dwarfish form of *J. lampocarpus* than to *J. alpinus* Villars (see above). Sprague's attempt to replace Villars' *J. alpinus* by the older *J. alpino-articulatus* cannot therefore be considered to be satisfactorily grounded.

J. alpinus Villars is the first acceptable name given to forms belonging to the series of Junci under discussion and therefore it should be given priority as the name of the species in the classification of these plants.

The main type of what is now more specifically called *J. alpinus* in Scandinavia is generally a rather big type with a floriferous stem, 10-40 cm. high. The cyme is generally richly developed, with the branches emanating from two points situate at different heights on the stem. Specially characteristic are the often very large umbels with almost sessile flowers. As in all other forms studied here, the outer perianth segments are obtuse, with a marked mucro, while the inner ones are obtuse and without any mucro. The perianth generally reaches to more than $\frac{3}{4}$ of the length of the capsule. The anthers are rather short, 0.4-0.7 mm., the capsule of various colours, most often with a short mucro, 2.6-3.1 mm. long, 1.3-1.5 mm. wide and tapering somewhat rapidly.

With regard to the distribution of this type it may be said that it seems to be rather common in middle Europe as well as in south-eastern Scandinavia. As to the details of the Scandinavian distribution it may be pointed out that it is rare in Denmark where it most likely only occurs on Sjaelland and north Jutland; on the other side it is not uncommon in Scania, in Oeland, Småland, Oestergötland and Västergötland. I think its distribution has a certain relation to the present and former occurrence of *J. fuscoater* (see further on). In Britain *J. alpinus*, taken in this narrower sense, occurs rarely and in a very distinct form with dark brown flowers and very small capsules down to 2.1 mm. long. It has been found in some places in Scotland, above all in

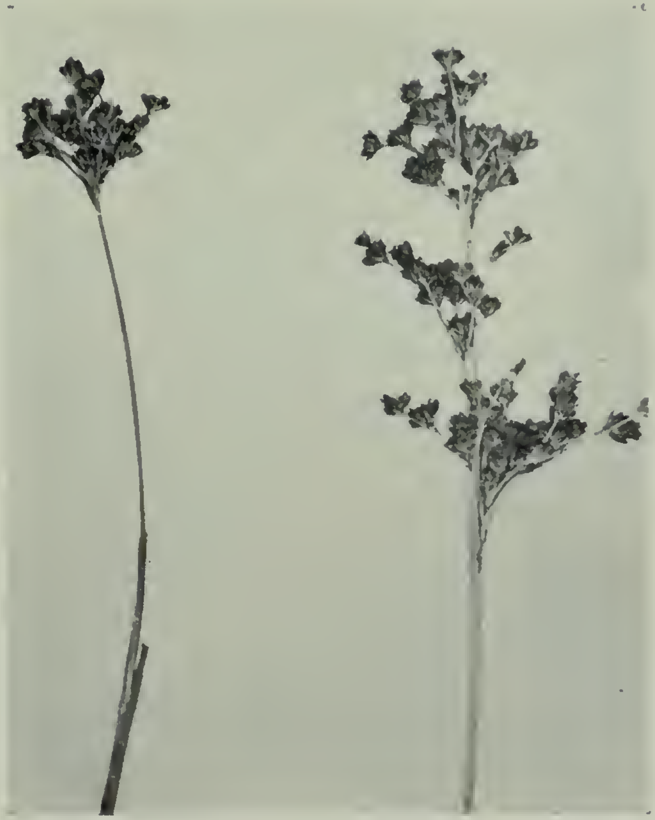

Fig. 3. *Juncus alpinus*, var. *fuscoater* (Celakovsky) Buch., f. *subatricapillus* Neum., from Dagstorp in Scania.

the Highlands and in one district in north England—Teesdale in Durham, where Dr Druce discovered it in 1903. About these British forms it may be said that those gathered at Ben Laiogh in Argyllshire are closely related to *J. alpestris* Hartman.

J. FUSCOATER Schreber.

In the year 1811 *J. fuscoater* was described by Schreber in Schweigger and Koerte's *Flora Erlangensis.* The description, which is very clear, lays special stress upon the semi-globular umbels of the new species and its black and shiny capsules, which end in a short mucro.

J. fuscoater is further characterised by its richly flowering umbels with practically sessile flowers and by its capsule which is generally just a little smaller than that of the normal *J. alpinus*, 2.3-2.8 mm. long, but often wider than the latter, 1.3-1.6 mm. wide. It is black, shiny and obtuse, with a very well-marked mucro, 0.2-0.3 mm. long.

The late Conservator Otto R. Holmberg found at Nosaby in Eastern Scania a great colony of this plant mixed with Wahlenberg's *J. nodulosus.* In the same locality he also found a great number of intermediate forms which he considered to be hybrids between the two named types. His supposition was confirmed by researches into their fertility which showed that plants of *J. nodulosus* and of *J. fuscoater* showed complete fertility whilst those of the intermediate type all showed a slightly but obviously reduced fertility. Similar conditions were found by the author in the north-western part of Scania at a place in the parish of Hov where the same types occurred together. In some cases I found the fertility reduced to less than 50%. My studies further showed that these plants considered as hybrids could not in most cases be morphologically distinguished from Scandinavian material of *J. alpinus* Villars. From the clear disposition of *J. nodulosus* and *J. fuscoater* to produce numerous and vigorous hybrid descendants resembling *J. alpinus* we came to the conclusion that these types could no longer be retained as separate species. I am rather inclined, with Buchenau, to place *J. fuscoater* as a variety under *J. alpinus* and thus call it *J. alpinus*, var. *fuscoater* (Celakovsky) Buchenau.

J. fuscoater is found chiefly in Eastern Europe, reaching Finland and Scandinavia in the north. In Scandinavia the localities show a markedly easterly concentration to Scania, Oelandia and Gotlandia. It is a very noteworthy fact that this plant is rather uncommon in Denmark though there seem to be numerous localities which edaphically are apt for it. The plant is quite wanting in England.

JUNCUS NODULOSUS Wahlenberg.

The most common *J. alpinus*-type of Scandinavia has often been called *J. nodulosus* Wahlenb. (Wahlenberg 1820, 1833, Fries 1828, 1835, Lindman 1918, 1926, Druce 1931, Pugsley 1931).

In Wahlenberg's *Flora Lapponica* (1812), *J. sylvaticus* is described, its chief characteristic being its mucronulate perianth segments. Wahlenberg refers to Willdenow's *J. sylvaticus*, to Schrank's and Hoppe's *J. subnodulosus* and others. He gives the habitat " locis uliginosis et paludosis per partem sylvaticam totam omnium Lapponiarum frequenter " and adds " multum altius hyperboream versus adscendit quam sequens species." In his *Flora Upsaliensis* (1820) he also mentions *J. sylvaticus*, but he further describes a new type belonging to the same group under the name *Juncus nodulosus.* The description of *J. sylvaticus,* as well as its synonyms, are to some extent altered, so that Wahlenberg's description now apparently refers to some form that is more closely related to *J. lampocarpus.* A good description is given of the new *J. nodulosus*, stress being laid upon the obtuse inner perianth segments and the long mucronulate capsule. As a synonym *J. subnodulosus* is given, to which in 1812 was referred by his description of *J. sylvaticus.* That Wahlenberg by the name *J. sylvaticus*, in the year 1812, really meant to indicate a *J. alpinus*-form is verified in *Flora Suecica* (1826), where he refers to *J. sylvaticus* 1812 as a synonym of *J. nodulosus.* This seems to be the reason why the species *J. sylvaticus,* which is never found in Scandinavia, has appeared in Swedish floristic literature up to quite recent times.

At the same time as Wahlenberg gave the name to and described *J. nodulosus*, C. J. Hartman published some very good diagnoses of the same plant under the name *J. rariflorus.* His species is characterised by erect branches in the panicle, umbels with 2-4 flowers, and by obtuse perianth segments which are shorter than the mucronate capsule. Besides the main form he describes a variety *β obtusatus* with obtuse capsules and larger flowers which is said to occur in the Lule Lapp-district. In a supplement to the synonyms (*l.c.*, p. 451) he points out that his *J. rariflorus* is identical with Wahlenberg's *J. nodulosus*—a remark of special interest in connection with the question of priority of these names.

J. nodulosus differs from *J. alpinus* not only in the shape and size of the umbels but also in the shape of the capsules. The umbels are generally few-flowered (2-5 up to 10-flowered), often less numerous than those of *J. alpinus.* The essential difference between these two types is. however, that solitary, or in some cases, numerous flowers in the umbels of *J. nodulosus* are distinctly pedicelled. The capsules vary very much in shape but are generally oblong, up to 4 mm. in length, gradually tapering and with a very short mucro or none at all. But occasionally we find specimens with shorter and more obtuse capsules, with a more distinct mucro. Such types often have dark flowers and are no doubt the types that have suggested Hartman's description of *β obtusatus.* They are not, however, confined to the northern part of Scandinavia.

Many authors (Buchenau 1890, etc., Pugsley 1931) have attached special value to the colour of the flowers and the capsules in their taxonomic treatment of these types, but that point of view cannot be maintained, seeing that in actual fact the colour shows a very wide variation. Moreover the shape of the capsule and such characteristic features cannot possibly serve any useful taxonomical purpose in the classification of *J. nodulosus.*

Thus *J. rariflorus* and its var. *obtusatus* in the first edition of Hartman's Flora are (as specimens in the herbaria in Upsala and Stockholm

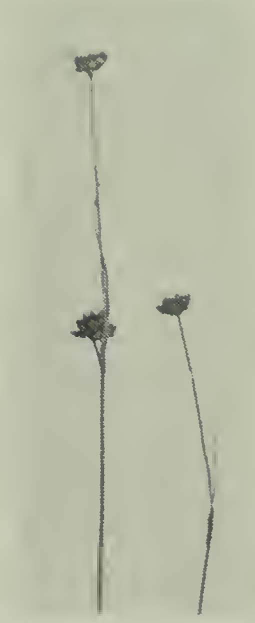

Fig. 2. *Juncus alpinus*, var. *fuscoater* (Celakovsky) Buch., from Martebo, Sweden.

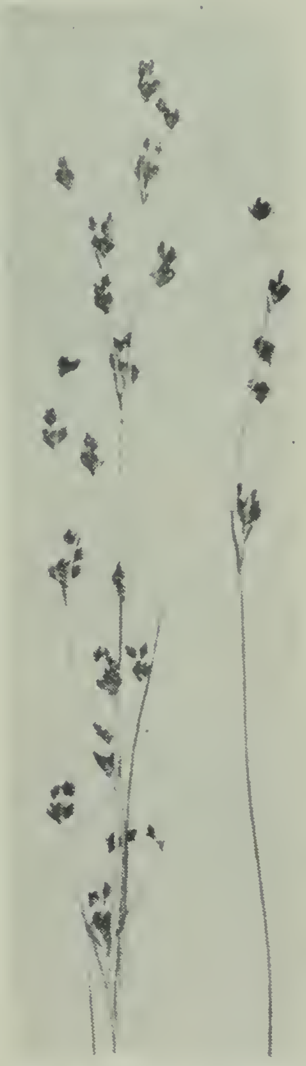

Fig. 4. *Juncus alpinus*, var. *rariflorus* (E. Fries) Hartman, from Stehag in Scania (left) and from Garpenberg in Dalecarlia (right).

clearly show) exactly identical with *J. nodulosus* Wahlenb., and partly identical with *J. ustulatus* in the second and third editions and *J. alpinus* in the following. The variety *rariflorus* of *J. alpinus* is identical in the later editions of this Flora with Wahlenberg's species. Hartman, in the latest editions of his flora, as well as Neuman (1901) and Lindman (1918, 1926), have overlooked the peculiar differences between *J. alpinus* Villars and *J. nodulosus* Wahlenberg.

Concerning the taxonomic value of this type it may be mentioned that a few isolated cultures have been made in order to get an idea of its constancy. Material was obtained, as already mentioned, from north-western Scania. Forms with distinctly pedicelled flowers and oblong capsules produced in their non-isolated descendants even forms with rich-flowering umbels and almost subsessile flowers. The colour of the capsule varied very much in the cultures from light brown to black. It has already been pointed out how Mr Holmberg, the late Conservator of Lund, at Nosaby in Scania discovered numerous intermediate forms between *J. nodulosus* and *J. fuscoater* in a locality in which both these species were found and how he came to the conclusion that these forms were hybrids between these two species, showing a slightly but definitely diminished fertility. This renders it somewhat inconvenient to retain *J. nodulosus* and *J. fuscoater* as separate species, and this idea is supported by the occurrence of quite a number of intermediate forms in the herbaria from regions where these species occur together.

J. nodulosus has a very wide distribution within Scandinavia and Finland and reaches the coastal areas of the Arctic Ocean. It seems to be quite rare in Iceland and Greenland, but occurs more abundantly in Canada and the northernmost part of the United States. I am inclined to refer Buchanan White's specimen gathered at Blair Atholl in the Highlands of Scotland to this species. Pugsley says that the specimen in herb. Marshall is almost certainly conspecific with his *J. Marshallii*, but I do not agree with him, for, in examining also the material of Buchanan White's plant in Dr Druce's herbarium, I noticed that the Blair Atholl plant had more acute capsules, often of a pale or light brown colour and agreed very well with some Scandinavian forms which undoubtedly must be referred to *J. nodulosus*. But I must point out that the determination of this specimen will ever be quite vague. There are also certain other specimens among the British material I have seen, which incline me to suppose that *J. nodulosus* must be present in Britain.

JUNCUS MARSHALLII Pugsley.

In the November number of the *Journal of Botany*, 1931, H. W. Pugsley has drawn our attention to a hitherto neglected type belonging to this group, which he has named *Juncus Marshallii* and of which he gives a good diagnosis. He characterises it especially as possessing an irregularly branched panicle with few and small umbels and distinctly pedicellate flowers, about 2 mm. long, partly subsessile. The capsule is small, scarcely reaching above the perianth. Pugsley mentions that his new species is fairly closely related to *J. nodulosus* Wahlenb., but that it is distinguished from the latter by its smaller and darker flowers and its shorter and more obtuse capsules. In connection therewith Pugsley discussed *J. nodulosus* and its taxonomic characters, to which indeed he gives too extreme a characterisation, influenced apparently by the description that Lindman (1926) gives of the plant. It has here been pointed out that the shape of the *J. nodulosus* capsule varies a good deal, and this Hartman (1820) had already remarked. The length of the capsules varies from 2.6 mm. up to about 4 mm., with numerous short forms in the northern part of Scandinavia as well as in the south-eastern parts, the latter character probably due to some influence of *J. fuscoater*.

On the other hand the very good material to be found in Scandinavian herbaria representative of Pugsley's new species shows that the typus from north Scotland upon which the diagnosis has been based (like the *J. alpinus* and the *J. nodulosus* of Scotland) has an extremely small capsule, in this case between 2.1-2.3 mm., while that of other Scandinavian and Icelandic specimens in most cases is much bigger and reaches about 2.6 mm. With reference to this character all transitions between the long-fruited *J. nodulosus* and *J. Marshallii* occur, the intermediate forms being often referred to Lindman's form *J. nodulosus*, f. *dissolutus*. This would indicate that Pugsley's new species is very probably more closely related to *J. nodulosus* than it was at first supposed to be.

But a close relationship is also demonstrable between *J. Marshallii* and Hartman's *J. alpestris*, the small dark-flowered alpine and arctic form. The latter attains, in some cases, to the height of the fully developed *J. Marshallii* and then often shows the same type of panicle though the flowers are mostly still subsessile and even somewhat larger. In other cases we find small forms of *J. alpestris* with smaller flowers than usual and with one or two shortly but distinctly pedicelled flowers.

It does not seem at all advisable therefore to keep Pugsley's species separate from the others here mentioned, and I do not think it is out of the question that it might equally correctly be classified directly under the var. *rariflorus* (*J. nodulosus*) as a sub-variety.

After studying the available material of this type from the herbaria in Stockholm, Upsala, Lund, Oslo, Bergen, and Kobenhavn, and after having seen British specimens of the plant in the Cambridge herbarium and in Dr Druce's herbarium, I should like to characterise it qualitatively in the same way as Pugsley, with particular reference to its partly subsessile and partly long pedicellate flowers and to its relatively short and dark capsules and flowers; quantitatively, however, I intend to supplement his data regarding the length of flowers, anthers and capsules.

This interesting type has a rather distinct distribution, occurring frequently within the atlantic districts of north-western Europe, where it is found in north Scandinavia, Iceland and Scotland (rare). It seems to be of a little more atlantic character than the other types. It may

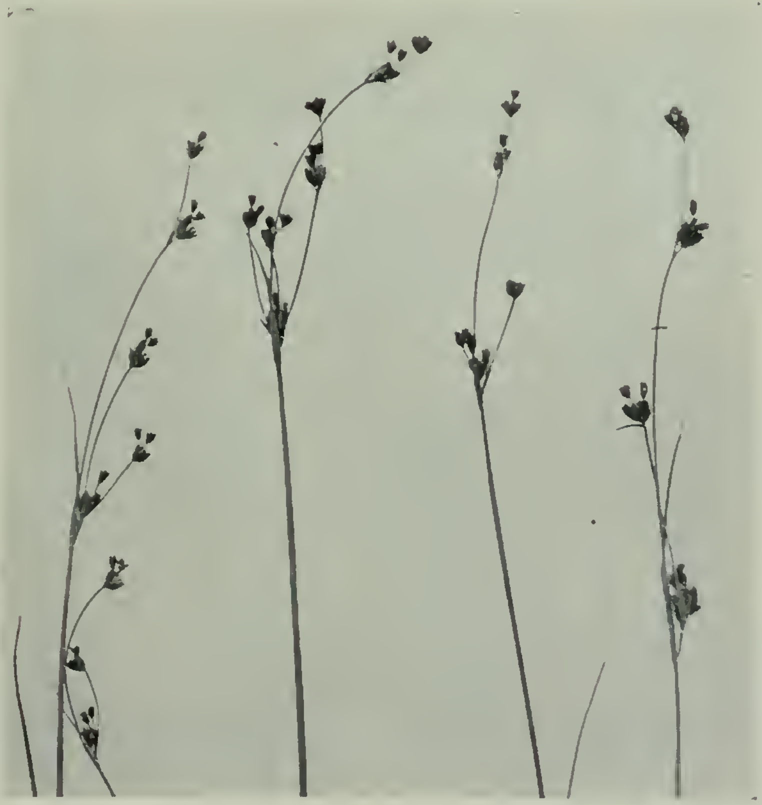

Fig. 5. *Juncus alpinus*, var. *Marshallii* (Pugsley) Lindquist. The three specimens to the left from Loch Ussie, in Scotland, that to the right from Rimarvatn on Iceland.

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be remarked that I cannot accept the specimen No. 27780 collected at Newfoundland by Fernald and referred to by Pugsley as belonging to this type, nor the plant collected by Buchanan White at Blair Atholl in Scotland. Both ought to be referred to *J. nodulosus*.

JUNCUS ALPESTRIS Hartman.

C. J. Hartman gave, in conjunction with his description of *J. variflorus*, a diagnosis to a related type which he named *J. alpestris*. He distinguished this from *J. variflorus* by its rich-flowered umbels and by its simpler panicle with few umbels. Kvikkjokk is named as the locality for this type. In the following edition of Hartman's Flora this species was reduced to a variety and called *J. ustulatus β alpestris*; in the fourth edition it was omitted altogether, though it was mentioned that sometimes *J. alpinus* varied with rich-flowered dark brown umbels when it is identical with *J. alpestris* Hartman 1820. The same note appears in the fifth edition of the same flora, in which a further variety, γ *uniceps*, is distinguished with the diagnosis " one or two inches with 1-2 small umbels at the top." In the eleventh edition of Hartman's Flora (1879) we find the species from 1820 noted as *J. alpinus*, var. *alpestris*, but in the twelfth it has entirely disappeared, and only f. *uniceps* is representing these types. In modern Swedish literature *J. alpestris* Hartman is noted only by Lindman, who (1918) names it *J. alpinus*, sub-sp. *mucroniflorus* and (1926) *J. nodulosus*, var. *variflorus*, a name by which Hartman never intended to denote this plant.

As just mentioned, Hartman's species is characterised chiefly by its reduced umbellate panicle. The branches of the panicle are often erect or subarcuate and terminate in a rich-flowered umbel from the basis of which another branch sometimes develops. The flowers are generally dark brown to black, subsessile or with solitary shortly pedicellate flowers.

J. alpestris is not quite so characteristic as the other here-studied types. Morphologically and taxonomically it is closely related to *J. alpinus*, from which it is distinguished by the much reduced umbellate panicle and the sometimes shortly pedicellate flowers. Moreover, it often has slightly wider bracteoles than the other species. It seems to change into *J. alpinus* often without any real limit and intermediate forms between these two types are not rare in Scandinavia. The *J. alpinus* in England shows, in some cases, a close relationship to *J. alpestris*. On the other hand *J. alpestris* also closely resembles *J. Marshallii* Pugsley in the size of the flowers and specially in the type of the panicle. It may further be mentioned that this type is sometimes difficult to distinguish from small forms of *J. alpinus*, var. *variflorus*, f. *grandiceps*.

In the second edition of Wahlenberg's *Flora Suecica* (1833) Laestadius describes a variety of *J. nodulosus* which he calls var. *biceps* et *uniceps* and about which he says that its flowers are placed together in one or two umbels and that it occurs near Karesuando in north Sweden.

Laestadius' variety has always been regarded as a good variety and sometimes even as a species. A study of its forms and their relation to *J. alpestris* shows, however, that it is very closely connected with this type, into which it directly changes even on the same rhizome. This is good reason therefore to regard this plant as only a form under var. *alpestris*, and call it var. *alpestris*, f. *uniceps* Hartman.

JUNCUS ANCEPS Laharpe and J. ATRICAPILLUS Drejer ap. Lange.

These two species are not known as British although they are in a certain sense extreme atlantic flora-elements. *J. anceps* is distributed through France, Italy and north-western Africa, and *J. atricapillus* from Sweden (very rare) and western Denmark along the western coast of the European continent to the west-Mediterranean areas. Although *J. atricapillus* is very closely related to *J. alpinus* and *J. fuscoater* and where they are in touch with each other give rise to several hybrids, they are in several specific characters so taxonomically separated from the *J. alpinus* form that I consider it most convenient to put those two forms taxonomically separate from *J. alpinus* and *J. fuscoater*. *J. anceps* and *J. atricapillus* differ mainly from the others in the length of the anthers and in the shape and size of the capsules and also, in general, in the type of the panicle. Even their distribution area is quite separate from that of the other types. They need not here be further discussed, but references are given to the full description of these types.

A. Antherae longae, 0.6-1.3 mm., capsula matura, 2.2-2.6 mm. longa, 0.9-1.1 mm. lata, oblonga-ovata, breviter acuminata, distincte mucronata.
    1. Caules et inflorescentia robusta, antherae 0.9-1.3 mm. longae, capsula fulva, 2.3-2.6 mm. longa, 0.9-1.1 mm. lata. .... *J. anceps.*
        a. Inflorescentia contracta, ramulis brevibus. .... f. *coarctatus.*
        b. Inflorescentia dissoluta, ramulis longis. .... f. *hercegovinus.*
    2. Caules et inflorescentia minus robusta, antherae 0.6-0.9 mm. longae, capsula castanea vel fuscoatra, 2.5-2.8 mm. longa, 1.0-1.1 mm. lata. .... var. *atricapillus.*
        a. Inflorescentia contracta, subcapitata, ramulis brevibus. f. *congestus.*
        b. Inflorescentia dissoluta, ramulis longis. .... f. *sparsiflorus.*

B. Antherae breves, 0.3-0.7 mm., capsula matura vulgo majora, (2.2)-2.6-3.9 mm. longa, 1.2-1.6 mm. lata, obovata, oblongo-ovata vel oblonga.
    1. Capsula plerumque obovata, 2.3-2.8 mm. longa, 1.3-1.6 mm. lata, perigonia paullo longiora, distincte mucronata.
        a. Inflorescentia contracta, ramulis brevibus. *J. alpinus*, var. *fuscoater*, f. *subatricapillus.*
        b. Inflorescentia non contracta. .... var. *fuscoater.*
    2. Capsula oblongo-ovata vel oblonga, (2.2)-2.6-3.9 mm. longa, 1.2-1.5 mm. lata, perigonium subaequans vel plerumque multo superans, mucro adest, sed minus prominens.
        a. Inflorescentia decomposita, ± ramifera.
            i. Flores semper sessiles vel subsessiles .... *J. alpinus.*
            ii. Flores ± pedicellati.
                † Flores pedicellati, saepe numerosi.

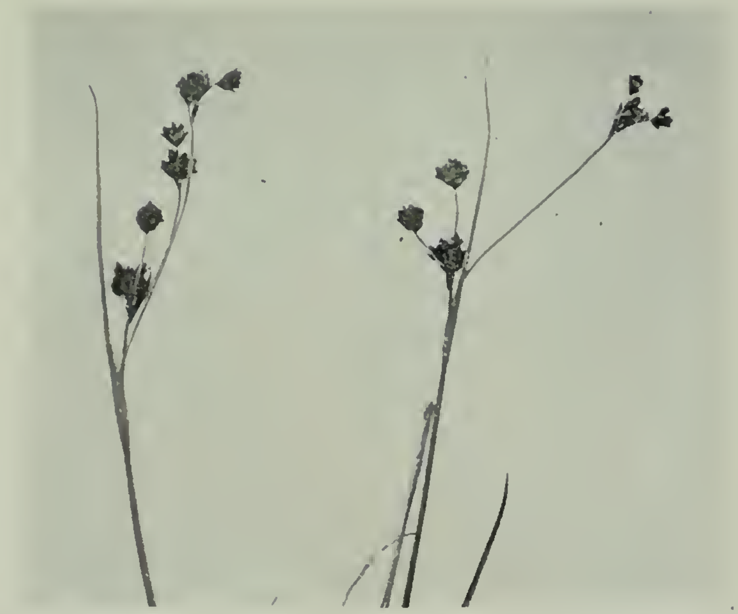

Fig. 6. *Juncus alpinus*, var. *alpestris* (C. J. Hartman) C. Hartman, from Dovre in Norway.

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- §. Flores fere omnes aequaliter pedicellati, pallescentia vel castanea, capsula perigonium plerumque multo superans. var. *rariflorus*, f. *dissolutus*.
- §§. Flores 2-6, aequaliter pedicellati, reliqui sessiles vel subsessiles, fuscoatra, capsula perigonium vulgo subaequans. var. *Marshallii*.
- §§§. Flores fere omnes inaequaliter pedicellati, capitulis magnis. .... var. *rariflorus*, f. *grandiceps*.

†† Flores 1-3, distincte pedicellati.

- §. Capsula oblonga—oblongo-ovata, pallida vel castanea. .... var. *rariflorus*.
- §§. Capsula obtusior, oblongo ovata, atrofusca. var. *rariflorus*, f. *obtusatus*.

b. Inflorescentia simplex umbellata, uni vel bicapitata. Capitula magna.

- i. Capsula oblonga, perigonium multo superans. var. *rariflorus*, f. *grandiceps*.
- ii. Capsula oblongo-ovata, obtusa, fuscoatra, perigonium paullo superans.
  - † Inflorescentia capitulis 3-8, flores interdum pedicellati. .... var. *alpestris*.
  - †† Inflorescentia capitulis 1-2 (3), flores sessiles vel subsessiles. .... var. *alpestris*, f. *uniceps*.

c. Planta pygmaea, capitula pauciflora vulgo unica.

- i. Antherae et capsula ut in A.2. .... var. *atricapillus*, f. *pumilus*.
- ii. Antherae 0.4-0.7 mm. longi, capsula obovata, mucronata. var. *fuscoater*, f. *acicularis*.
- iii. Antherae 0.4-0.7 mm. longi, capsula oblongo-ovata, mucronata. .... var. *alpinus*, f *nanus*.
- iv. Antherae 0.4-0.7 mm. longi, capsula oblonga, plerumque non mucronata. .... var. *rariflorus*, f. *pygmaeus*.

JUNCUS ANCEPS Laharpe, 1827.

Syn.: *J. sylvaticus*, var. b. *anceps* Cosson et Durieu, 1854-67.
J. anceps, var. *genuinus* Buchenau, 1883.
J. atricapillus, b. *anceps* Richter, 1890.
J. littoralis (Salzman) Duval-Jouve, 1872.
J. fuscoater Pospichal, 1897, non Schreber, 1811.

Perennis. Rhizoma horizontale, longum, pallidum vel fuscum, diam. 3-9 mm. Caules floriferi, robusti, erectis, plerumque compressi, 20-26 cm. alti, 2-5 foliati. Folia basalia vaginiformia; folia caulina laminata, 10-30 cm. longa, subarcuata vel arcuata, vulgo distincte articulata, vaginis saepe compressis, rubescentibus vel pallidis vel fuscis. Inflorescentia decomposita vel supradecomposita, ramis numerosis erectis vel arcuatis, interdum abbreviatis. Bracteae florum ovatae vel lanceolatae, aristato-mucronatae, membranaceae, capitulis brevioribus. Capitula plerumque numerosissimi, 3-9-florifera, pallida vel fulva, floribus omnino sessilibus vel subsessilibus. Flores fulvi quam in *Junco alpino* minores, 2.2-2.6 mm. longi; tepalis aequilongis, externis duris distincte carinatis, mucronatis, internis omnino obtusis destructione marginis membranacei, plerumque specie acutis. Tepala capsulam aequantia vel ¾ capsulae superantia. Stamina 6, usque 2 mm. longa, filamenta linearia, alba, antherae quam in *Junco alpino* longiores, 0.9-1.3 mm. longae. Capsula trigona-elliptica, ovata vel ovato-lanceolata, sensim angustata acuta, fulva saepe quam in var. *atricapillus*, minor, 2.3-2.6 mm. longa, 0.9-1.1 mm. lata, mucrone ca. 0.2 mm. longo. Semina pallida vel fusca, anguste obovata obtusa, 0.4-0.7 mm. longa, rectangulariter reticulata.

Planta atlantica et occidentali-mediterranea; habitat in Gallia, Italia, Algeria et Tunesia.

Forma COARCTATUS Lindquist, nov. f. Inflorescentia valde contracta.

Forma HERCEGOVINUS Lindquist, nov. f.
Syn.: *J. anceps*, sub-sp. *Herzegovina* Sagorski, 1901.

Planta minus robusta habitu ad var. *atricapillus* vergens. Inflorescentia dissoluta, ramis minus numerosis quam in *Junco ancipite*.

Var. ATRICAPILLUS Buchenau, 1883.
Syn.: *J. fuscoater*, sub-sp. *coarctatus* Meyer, 1836 (nomen nudum).
J. articulatus, sub-sp. *atricapillus* Hartman, 1879.
J. alpinus, sub-sp. *atricapillus* Krok, 1889.
J. atricapillus Drejer, 1838 (nomen nudum).
J. atratus Fries, 1842, non Krocker.
J. atricapillus Drejer ap. Langè, 1851.

Caules minus robusti, (10)-15-30-(40) cm. alti, 2 usque 3-foliati. Folia 10-30 cm. longa, stricta vel subarcuata, plerumque distincte articulata. Inflorescentia 1-10-(15) cm. longa, decomposita vel supradecomposita, interdum compacta, ramis numerosis elongatis vel abbreviatis, ± arcuatis. Capitula castanea vel fuscoatra, 2-7-florifera, floribus breviter pedicellatis vel sessilibus. Flores castanei vel fuscoatri, 2.5-2.8 mm. longi quam in *Junco alpino*, paullo minores sed majores quam in var. *ancipite*. Tepala capsulam saepe aequantia vel ⅘ capsulae superantia. Antherae quam in *Junco alpino* longiores, sed quam in var. *ancipite* minores, 0.6-0.9 mm. longi. Capsula fulva vel fuscoatra vel atra quam in var. *ancipite* major, 2.5-2.8 mm. longa, 1.0-1.1 mm. lata, oblongo-ovata, acuminata, distincte mucronata, mucrone ca. 0.2 mm. longo. Semina ut in *Junco alpino*.

Planta atlantica; habitat in litoribus Europae occidentalis in Suecia (rarissima), in Jutlandia Daniae, in regionibus maritimis Germaniae, Bataviae et Belgiae, in Gallia et Africa occidentali-mediterranea.

Forma CONGESTUS Lange, 1856. Inflorescentia contracta, saepe subcapitata.

Forma SPARSIFLORUS Lange, 1856, p.p. Inflorescentia ramulis paullo numerosis, elongatis, ± dissoluta.

Forma PUMILUS Lindquist, nov. f. Planta pygmaea, usque 15 cm. alta, capitula plerumque unica, pauciflora. Capsula ut in var. *atricapillo*.

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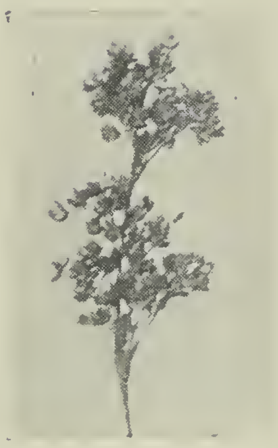

Fig. 9. *Juncus anceps* Laharpe, from Palavais in France.

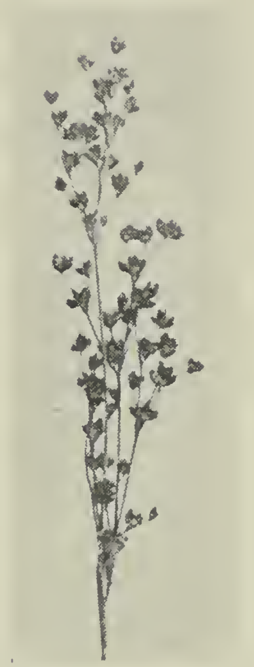

Fig. 7. *Juncus alpinus*, var. *alpestris* (C. J. Hartman) C. Hartman, f. *uniceps* Krok, from Karesuando in northern Sweden.

JUNCUS ALPINUS Villars, 1787.

Syn.: *J. alpino-articulatus* Chaix, 1786 (nomen nudum).
J. geniculatus v. Paula Schrank, 1789.
J. mucroniflorus Clairville, 1811.
J. intermedius Poiret, 1813.
J. fuscoater Meyer, 1822, Kunth, 1841, non Schreber, 1811.
J. obtusiflorus Eichwald, 1830.

Perennis. Rhizoma breve horizontale, pallidum vel fuscum, non fibrosum, internodiis distinctis, diam. 2-6 mm. Caules floriferi, erecti, teretes vel compressi, 2-5-foliati, (1)-10-40-(60) cm. alti. Folia basalia vaginiformia; folia caulina laminata, 4-10 cm. longa, ± compressa et articulata, canaliculata, vaginis subcompressis, rubescentibus vel pallidis. Inflorescentia decomposita, anthelata elongata, usque (2) 5-20 cm. longa, ramis saepe numerosis, erectis-patentibus. Bracteae florum late ovatae, aristato-mucronatae, membranaceae, ferrugineae vel fuscae, capitulis brevioribus. Capitula plerumque numerosa, 3-8-flores, pallida vel castanea vel fuscoatra, floribus sessilibus. Flores (2.1)-2.5-3.0 mm. longi, pallidi vel castanei vel fuscoatri. Tepala aequilonga, ovata vel oblongo-ovata, obtusa, marginibus membranaceis, externa dorso carinata et distincte nervosa, margine membranaceo, apicem versus involuto, apice vel prope apicem distincte mucronata, interna omnino obtusa, plana, trinervosa. Tepala vulgo ¾ capsulae superantia. Stamina 6, usque 1.5 mm. longa; filamenta linearia, alba; antherae flavae, breves, 0.4-0.7 mm. longae. Capsula trigona, oblongo-ovata vel ovata, obtusa, pallida vel castanea vel fuscoatra (2.2) 2.6-3.1 mm. longa, 1.3-1.5 mm. lata, apicem versus sensim angustata, mucrone brevi. Semina pallida vel castanea, 0.4-0.7 mm. longa, oblongo-ovata, rectangulariter reticulata.

Planta Europae, Asiae et Americae septentrionalis. In Europa media et Scandinavia austro-occidentali frequens; in Scandinavia septentrionali et in Britannia rarior.

Durham (66). Widdy Bank, 1909, G. C. DRUCE (Hb. Dr.); Widdy Bank near Langdon Beck, August 1930, G. C. DRUCE (Hb. Dr.); Winch Bridge, August 1930, G. C. DRUCE (Hb. Dr.).

Kirkcudbright (73). Loch Greenoch, 1910, E. WEST (Hb. Oxon).

Mid Perth (88). Meall na Saone, near Luib, 1889, E. S. MARSHALL (Herb. Cantab.); Meall Chuirn, near Luib. 1889, E. S. MARSHALL (Herb. Cantab.).

E. Perth (89). Glen Shee, 1892, E. S. MARSHALL (Herb. Cantab.).

Easterness (96). Glen Ennich, July 1887, G. C. DRUCE in *Ann. Scot. Nat. Hist.*, 122, 1894 (Hb. Dr.).

Argyll (98). Ben Laiogh, 1893, E. S. MARSHALL (Hb. Dr.).

Forma NANUS Neuman, 1901. Planta pygmaea, usque 10 cm. alta, capitula unica, pauciflora.

Var. FUSCOATER (Celakovsky) Buchenau.

Syn.: *J. lampocarpus*, δ *fusco-ater* Celakovsky, 1867.
J. alpinus, β *fuscoater* Buchenau, 1890.
J. fuscoater Schreber ap. Schweigger et Koerte, 1811.
J. ustulatus Hoppe, 1819.
J. microcarpus Nolte, 1828.

Caules 15-55 cm. alti, 2-3-foliati. Folia 5-20 cm. longa, stricta vel subarcuata, indistincte articulata. Inflorescentia 3-15 cm. longa, decomposita vel supradecomposita, ramis floriferis patentibus. Capitula subrotunda, plerumque atra, floribus numerosis, semper sessilibus. Flores fuscoatri vel atri, 2.4-2.8 mm. longa; tepalis capsulam aequantibus vel ¾ capsulae superantibus. Antherae ut in *Junco alpino*, 0.4-0.7 mm. longae. Capsula fuscoatra vel atra, basi plerumque pallida vel castanea, 2.3-2.8 mm. longa, 1.3-1.6 mm. lata, obovata, apice mucronata. Semina ut in *Junco alpino*.

Planta Europae orientalis; habitat in Scandinavia australi ut in Oelandia, Gotlandia, Scania et Dania orientalis.

Forma SUBATRICAPILLUS Neuman, 1901. Inflorescentia contracta, subcapitata, ramulis brevibus.

Forma ACICULARIS Lindquist, nov. f. Planta pygmaea, usque 10 cm. alta, capitula plerumque unica, pauciflora. Capsula ut in var. *fuscoatro*.

Var. RARIFLORUS (Fries) Hartman.

Syn.: *J. nodulosus*, β *rariflorus* Fries, 1828.
J. alpinus, β *rariflorus* Hartman, 1849.
J. articulatus, var. *pelocarpus* Gray, 1856, non Meyer, 1822.
J. alpinus, var. *insignis* Buchenau, 1890.
J. alpinus, var. *affinis* Ascherson & Graebner, 1904.
J. alpinus, sub-sp. *nodulosus* Lindman, 1918.
J. sylvaticus Wahlenberg, 1812, non Willdenow.
J. nodulosus Wahlenberg, 1820.
J. rariflorus Hartman, 1820 (vide Hartman, 1820, p. 451).
J. affinis Brown, 1823.
J. Richardsonianus Schulthess, 1829.
J. ustulatus Hartman, 1832, non Hoppe, 1819.
J. pelocarpus Gray, 1848, non Meyer.
J. elongatus Vasey in herb. apud Engelman, 1868.

Caules (1)-10-30-(45) cm. alti, 2-foliati. Folia 3-20 cm. longa, stricta vel subarcuata, ± articulata. Inflorescentia 3-18 cm. longa, decomposita, ramis erectis vel patentibus. Capitula pallida vel castanea vel raro fuscoatra, minus numerosa, 2-5-(10) florifera, floribus perpaucis distincte pedicellatis, pedicellis usque 4 mm. longis. Flores pallidi vel castanei, 2.6-3.0 mm. longi. Capsula tepalis usque ⅓-½ superans. Antherae ut in *Junco alpino*, 0.4-0.7 mm. longae. Capsula pallida vel castanea vel interdum fuscoatra, oblonga vel oblongo-ovata, sensim

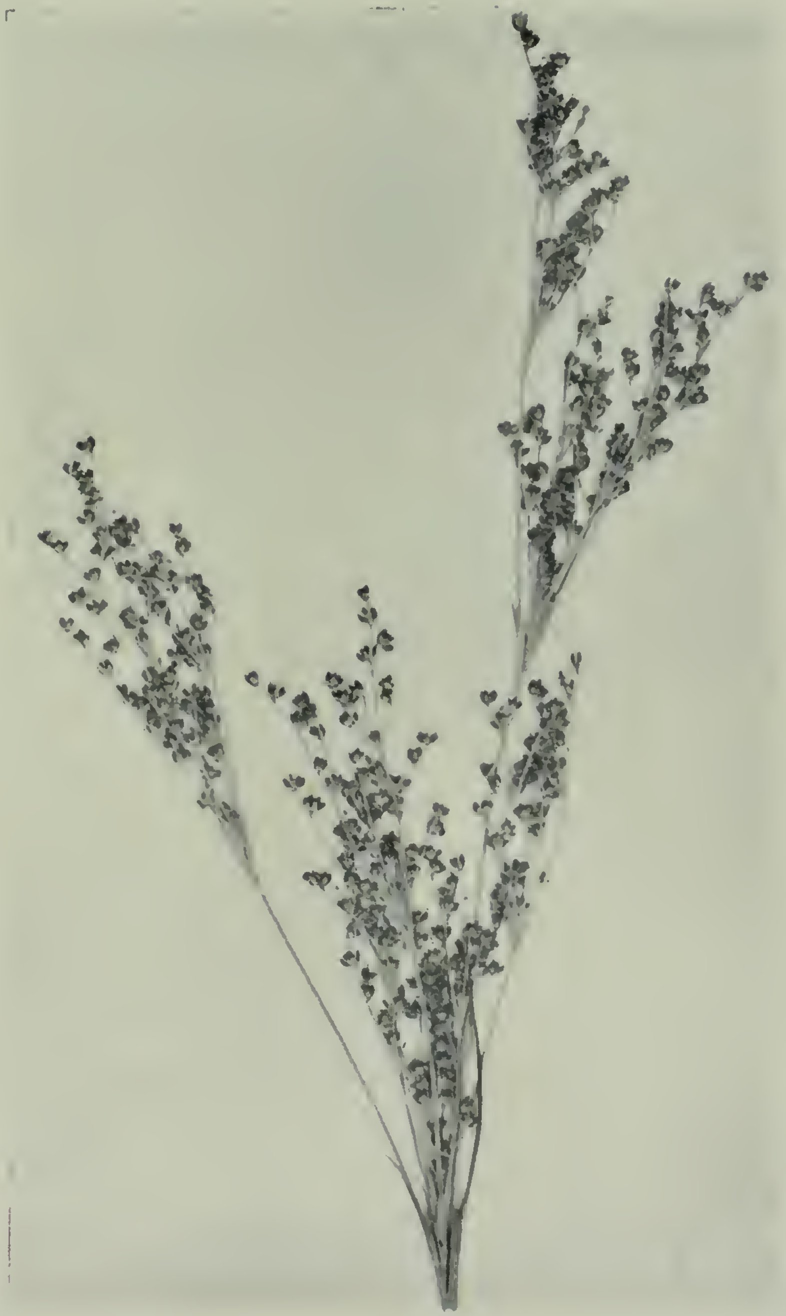

Fig. 8. *Juncus anceps* Laharpe, from Piccino di Palazzetti in Italy.

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angustata, indistincte mucronata, 2.6-3.9 mm. longa, 1.3-1.5 mm. lata. Semina ut in *Junco alpino*.

Planta borealis circumpolaris; habitat in Scandinavia, Fennia, Britannia (rarissime), Islandia. Groenlandia et America septentrionali.

E. Perth (89). Blair Atholl, 1887. F. BUCHANAN WHITE (Herb. Dr.).

Forma OBTUSATUS Lindquist, nov. f.

Syn.: *J. rariflorus, β obtusatus* Hartman, 1820.

Capsula obtusa, atra, 2.6-3.1 mm. longa. Flores atrorubentes. Habitat in Scandinavia septentrionali, in Fennia et in America septentrionalis, verisimiliter etiam alibi.

Forma DISSOLUTUS Lindman, 1918. Flores fere omnes longe et aequaliter pedicellati. Capsula pallescens vel castanea, perigonium plerumque multo superans.

Forma GRANDICEPS Lindquist, nov. f. Inflorescentia simplex vel umbellata. Capitula magna, floribus fere omnibus inaequaliter pedicellatis. Capsula oblonga, perigonium multo superans.

Forma PYGMAEUS Lindquist, nov. f. Planta pygmaea, usque 10 cm. alta, capitula pauciflora, vulgo unica. Capsula oblonga, pallida vel castanea, indistincte mucronata.

Var. MARSHALLII (Pugsley) Lindquist, nov. var.

Syn.: *J. Marshallii* Pugsley, 1931.

Caules graciles, erecti, 1-2-foliati. Inflorescentia decomposita, usque 10 cm. longa, ramis floriferis rectis vel flexuosis, capitulis 1-8-floris. Flores nunc subsessiles, nunc usque 6 mm. pedicellati. Flores minimi, 2.0-2.6 mm. longi, castanei vel fuscoatri, tepala subaequilonga. Antherae minimae, 0.3-0.6 mm. longae. Capsula 2.1-2.6 mm. longa, obovata, obtusa, mucronata, fuscoatra vel atra, tepala subaequans vel paullo superans.

Planta borealis; habitat in Scandinavia septentrionalis, praecipue in Norwegia occidentalis, in Islandia et rarissime in Scotia.

E. Ross (106). Loch Ussie, 1892, E. S. MARSHALL (Herbs. Cantab. and Dr.).

Var. ALPESTRIS (C. J. Hartman) C. Hartman, 1879.

Syn.: *J. ustulatus, β alpestris* Hartman, 1832.
J. alpinus, α genuinus Buchenau, 1890.
J. alpinus, var. *mucroniflorus* (Clairville) Ascherson & Graebner, 1904.
J. nodulosus, var. *rariflorus* Lindman, 1926, non Hartman.
J. alpinus, sub-sp. *mucroniflorus* (Clairville) Lindman, 1918.
J. alpestris Hartman, 1820.

Caules (10) 15-25 cm. alti, 1-2-foliati. Folia 1-5 cm. longa, erecta vel subarcuata, saepe distincte articulata. Inflorescentia 1-6 cm. longa, umbellata, ramis erectis vel patulis, plerumque paullo arcuatis; in f.

unicipite capitula vulgo unicapitata vel bicapitata. Capitula fuscoatra vel atra, 4-10-florifera, floribus sessilibus vel raro singularibus, breviter sed distincte pedicellatis. Flores fuscoatri, 2.7-3.2 mm. longi, petalis capsulam parum sed distincte superantibus. Antherae 0.4-0.7 mm. longae. Capsula fuscoatra vel atra, 2.9-3.2 mm. longa, 1.3-1.5 mm. lata, late-ovata—oblongo-ovata, breviter mucronata. Semina ut in *Junco alpino*.

Planta arctica et alpina; habitat in Scandinavia et Fennia septentrionali, in Islandia, Groenlandia et America septentrionalis, necnon in Alpibus satis rare.

Forma UNICEPS Krok.

Syn.: *J. alpinus*, f. *uniceps* Hartman, 1889.
J. alpinus, f. *uni-biceps* Neuman, 1901.
J. nodulosus, *β biceps* et *uniceps* Laestadius ap. Wahlenb., 1833.
J. nodulosus, var. *biceps* Laestadius, 1839.
J. alpinus γ uniceps Hartman, 1849.
J. lampocarpus, var. *pygmaeus* Buchenau, 1890, non Salis-Marschlins, 1833.
J. alpinus, var. *Requienii* Richter, 1890.
J. Requienii Parlatore, 1852.

Planta 2-15 cm. alta, 1-foliata, uniceps vel biceps, ramis erectis strictis. Distributio ut in var. *alpestris*; etiam in Corsica.

LITERATURE.

Ahlfvengren, F. Hallands växter. Hälsingborg, 1924.

Ascherson, P., och Graebner, P. Synopsis der Mitteleuropäischen Flora, ii., 2. Leipzig, 1902-1904.

Brenner, M. Ueber *Juncus articulatus* L. in Fl. Suec. et Sp. Plant. I., Botanisches Centralblatt, 1889. Cassel, 1889.

Brown, R. Extracts from Dr Richardson's Botanical Appendix to the "Narrative of a Journey to the Shores of the Polar Sea," by Captain John Franklin. London, 1823.

Buchenau. F. Eine verkannte deutsche Fanerogame. Berichte der deutschen botanischen Gesellschaft, 1883.

—— Monographia Juncacearum. Engler's Botanische Jahrbücher, xii Leipzig, 1890.

—— Juncaceae. Das Pflanzenreich. Leipzig, 1906.

Celakovsky, L. Prodromus der Flora von Böhmen. Prag, 1867.

Clairville, J. de. Manuel d'Herborisation en Suisse et en Valais. Winterthour, 1811.

Cosson, E., & Durieu de Maisonneuve. Exploration scientifique de l'Algérie: Flore d'Algérie, Phanérogamie, Groupe de Glumacées. Paris, 1854-67.

Druce, G. C. *Juncus alpinus* Vill. The Botanical Society and Exchange Club of the British Isles. Interim Report, 1930. Oxford, 1930.

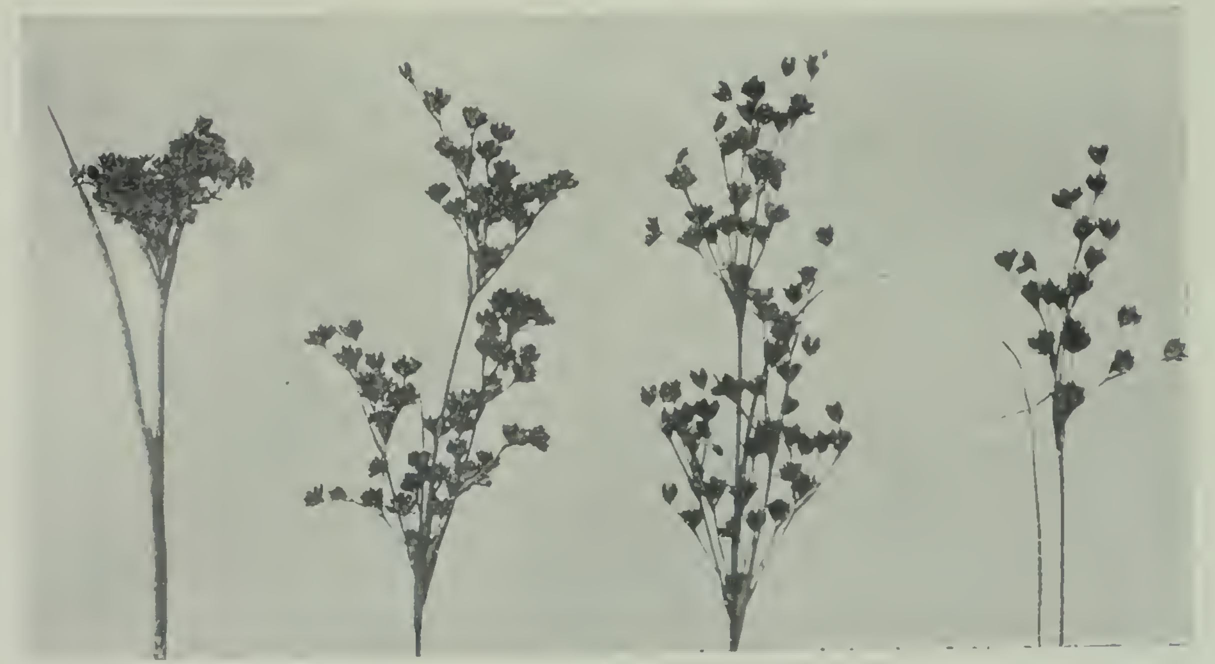


Fig. 10. *Juncus anceps*, var. *atricapillus* Buch. To the left f. *congestus* Lange, from Faarupklit, in Denmark; in the middle, two specimens of the real var. *atricapillus*, and to the right the f. *sparsiflorus* Lange, all from Dagstorp, in Scania.

BRIT. MUS. (N.H.)

—— Plant Notes for 1930. The Botanical Society and Exchange Club of the British Isles. Report for 1930. Arbroath, 1931.

Duval-Jouve, J. De quelques Juncus à feuilles cloissonées et en particules des *Juncus lagenarius* et *Fontanesii* Gay et du *J. striatus* Schousb. Revue du Science Naturelle. Paris, 1872.

Eichwald, E. Naturhistorische Skizze von Lithauen . . . Vilna, 1830.

Engelmann, G. A Revision of the North American Species of the Genus Juncus, with a description of new and imperfectly known species. The Transactions of the Academy of Science of St Louis, ii. St Louis, 1868.

Fries, E. Novitiae Florae Suecicae. Ed. altera. Lund, 1828.

—— Corpus florarum provincialum Suecicae. i., Floram Scanicam. Upsaliae, 1835.

—— Novitiae Florae Suecicae. Mantissa, iii. Upsalla, 1842.

Gray, A. A Manual of the Botany of the Northern United States. Boston och Cambridge, 1848.

—— Manual of the Botany of the Northern United States. New York. 1856.

v. Haller, A. Historia Stirpium Indigenarum Helvetiae Inchoata Bern, 1768.

Hartman, C. J. Handbok i Skandinaviens Flora. 1 uppl. Stockholm. 1820.

—— Handbok i Skandinaviens Flora. 2 uppl. Stockholm, 1832.

—— Handbok i Skandinaviens Flora. 4 uppl. Stockholm, 1843.

—— Handbok i Skandinaviens Flora. 5 uppl. Stockholm, 1849.

Hartman, C. Handbok i Skandinaviens Flora. 11 uppl. Stockholm, 1879.

Hoppe, D. H. Anleitung, Gräser und grasartige Gewächse nach einer neuen Methode für Herbarium zuzubereiten. Regensburg och Nürnberg, 1819.

Krocker, A. J. Flora Silesiaca renovata, emendata . . . Vratislavia, 1787-1823.

Krok, Th. O. B. N., C. J., och C. Hartman's Handbok i Skandinaviens Flora. 12 uppl. Stockholm, 1889.

Kunth, C. S. Enumeratio Plantarum. Stuttgart och Tübingen, 1841.

Laharpe. J. de. Essai d'une Monographie des vraies Joncées. Paris. 1827.

Lange, J. Haandbog i den danske flora. Kjobenhavn, 1851.

—— Icones Plantarum sponte nacentium in regno Daniae . . Florae Danicae nomine inscriptum. Fasc. 46-48. Hauniae, 1871.

—— Haandbog i den danske flora. 2 upl. Kjøbenhavn, 1856.

Lindman, C. A. M. Svensk Fanerogamflora. Stockholm, 1918.

—— Svensk Fanerogamflora. Stockholm. 1926.

Meyer. E. Synopsis Juncorum. 1822.

Meyer, G. F. W. Flora des Königsreichs Hannover. Göttingen, 1836.

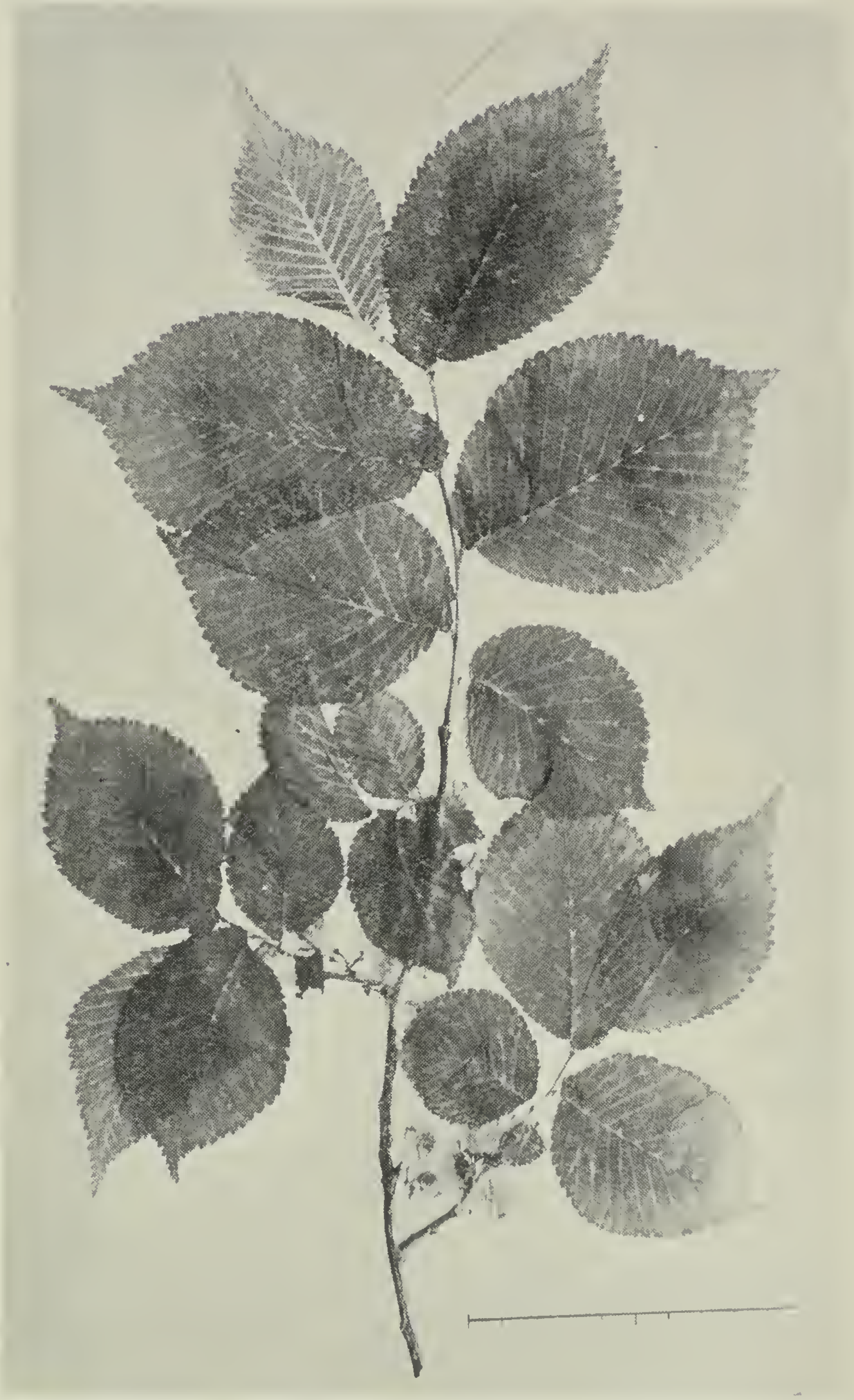
Neuman, L. M , och Ahlfvengren, F. Sveriges Flora. Lund, 1901.

Nolte, E. F. Novitiae Florae Holsaticae. Hamburg, 1828.

Parlatore, F. Flora Italiana, ii. Firenze, 1852.

v. Paula Schrank, F. Baiersche Flora. München, 1789.
Poiret, J. L. M. Leçons de Flore. Paris, 1819.
Pospical, E. Flora des Oesterreichischen Kštenlandes. Leipzig och Wien, 1897.
Pugsley, H. W. A new *Juncus* in Scotland. The Journal of Botany. London, 1931.
Raunkiaer, C. Dansk Excursionsflora. Kjøbenhavn, 1922.
Richter, H. Plantae Europaeae Enumeratio Systematica. Leipzig, 1890.
Roemer, J. J., och Schultes, J. H. Caroli a Linné Equitis Systema Vegetabilium . . . v. Stuttgart, 1829.
v. Salis Marschlins, U. Aufzählung der in Korsika und zunächst in der Umgebung von Bastia von mir bemerkten Cotyledonar-Pflanzen. Flora, xvi., 2. Regensburg, 1833.
Sagorski, E. Beitrag zur Flora der Herzegovina. Mitteilungen des Thüringischen Botanischen Vereins, Neue Folge 16. Weimar, 1901.
Scheuchzer, J. Agrostographia sive Graminum, Juncorum, Cyperorum, Cyperoidum iisque affinium Historia. Tiguri, 1719.
Schreber, vide Schweigger och Koerte.
Schultes, vide Roemer and Schultes.
Schweigger, A. F., och Koerte, F. Flora Erlangensis. Erlangen, 1811.
Sprague, T. A. *Juncus alpino-articulatus.* The Journal of Botany, 1928. London, 1928.
Wahlenberg, G. Flora Lapponica. Upsala, 1812.
—— Flora Upsaliensis. Upsala, 1820.
—— Flora Suecica. Stockholm, 1824-26.
—— Flora Suecica. 2 uppl. Stockholm, 1833.
Villars, M. Histoire des Plantes de Dauphiné, i.-ii. Grenoble, 1786-87.
Willdenow, L. Caroli a Linné Species Plantarum. Tom ii. Berlin, 1799.

BRIT. MUS. (N.H.)



Ulmus glabra, var. *scabra* Lindquist, nov. var. Extremely broad-leaved form, from Vallstena : Aloena on the island Gotland, Sweden.

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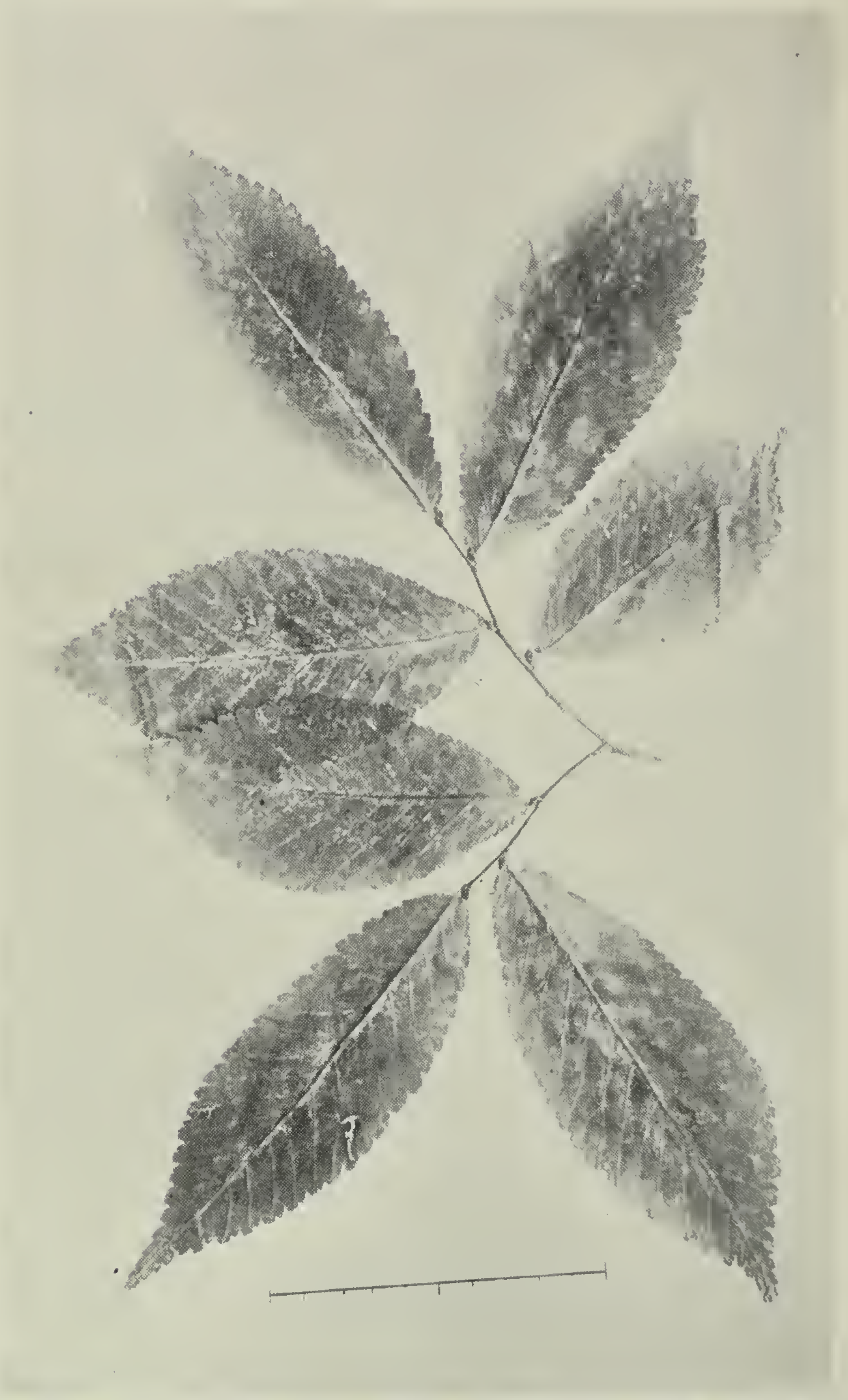

Ulmus glabra, var. *montana* Lindquist, nov. var. Extremely narrow leaved form, from Offerdal, Jamtland, Sweden.

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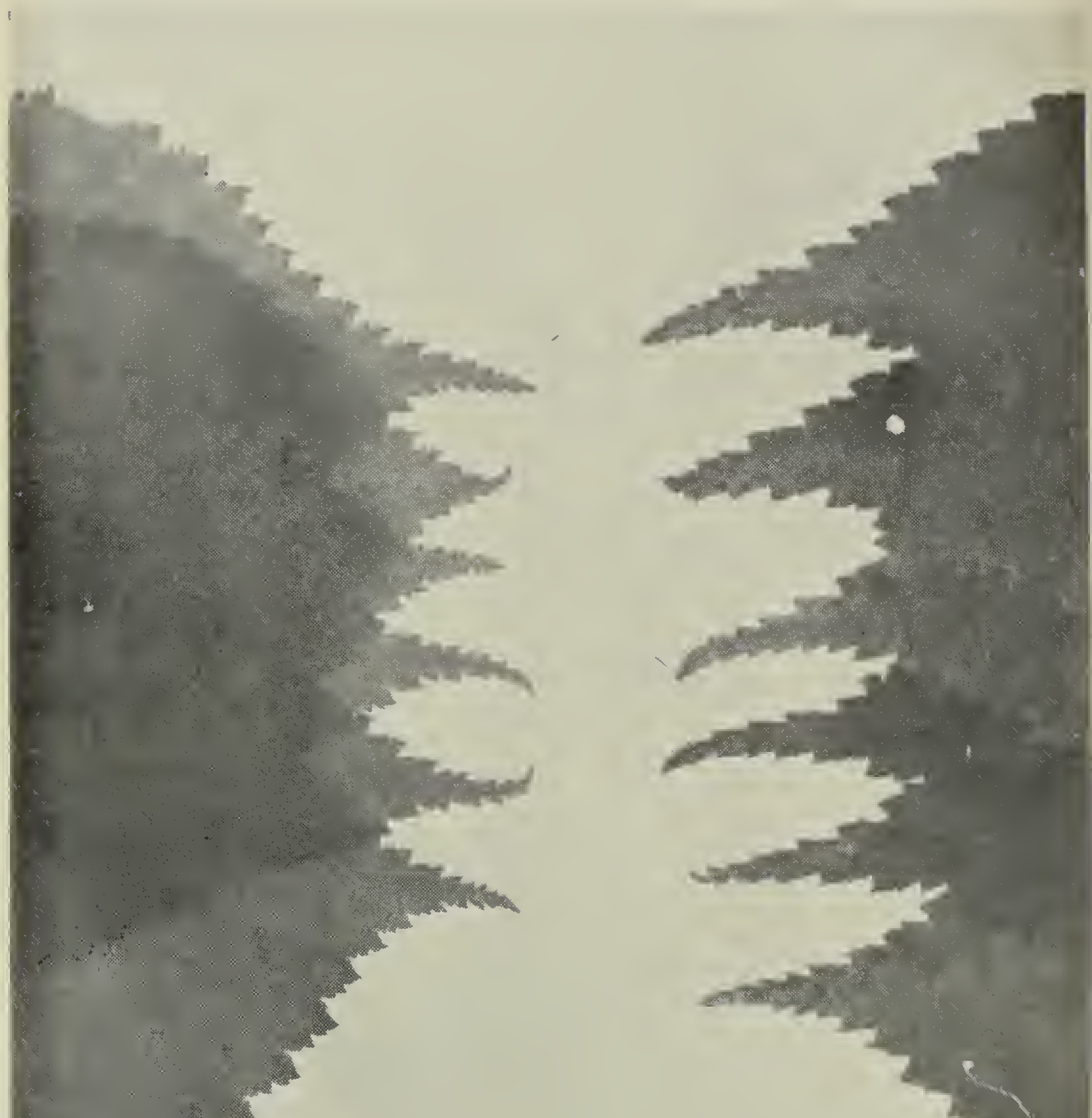

Leaves of Elms showing differences in the serrature. To the left var *scabra*, from Skaralid, in Scania, Sweden; to the right var. *montana*, from Skikkisjoberget, in Lapponia, Sweden.

TWO VARIETIES OF NORTH-WEST EUROPEAN ULMUS GLABRA HUDSON.

Dr Bertil Lindquist.

The species *Ulmus glabra* Hudson must be regarded as a highly polymorphic species, due mainly to the intense cultivation of this tree during late historic times. The *spontaneous* North-west European forms of this species seem, however, to be less polymorphic. As a result of an investigation into such forms, based on a large statistic material, it was found that two extreme types of *Ulmus glabra* could be distinguished, differing systematically in several mean characters. Thus, one of them, which is here called var. *scabra*, is characterised by its hairy, 2-5-year-old twigs and its very broad, thin, and almost acutely-serrate leaves; the other, which is here called var. *montana*, by its almost glabrous, 2-5-year-old twigs with several lenticels and its quite narrow, thick, and almost obtusely-serrate leaves. These types are considered to be real varieties of the species (=*U. glabra*), with fertile hybrids and with numerous intermediate forms. They seem to have well-separated distribution areas in North-western Europe: var. *scabra* occurring in middle Europe and northwards to Denmark, south and middle Sweden and Finland; var. *montana* in north England and Scotland and also in northern and western Norway and in northern Sweden. In another paper published in Swedish there will be brought evidences for the supposition that the North Swedish elm must have migrated into Sweden from England via Norway and not from middle Europe via South Sweden. There will be several hybrids between these two types of elm also within areas where only one of them occurs spontaneously, due to the fact that both types during the last three centuries have been widely planted in British as well as Middle-European, Danish, and Swedish gardens.

Short Latin diagnoses are here given for these varieties:—

Ulmus glabra, var. *scabra* Lindquist, nov. var.

Verisimiliter synonymae: *U. campestris* L., 1753, p.p. *U. scabra* Miller, 1768. *U. major* Reichenbach, 1850, non Smith, 1812. *U. tridens*, *U. germanica* Hartig, 1851. *U. scabra* sub-sp. *major* Koch, 1872 (?).

Arbor cortice saepe tenue, ramulis junioribus (2-5-ennibus) ± pubescentibus, lenticellis paucis. Folia lato-ovata, distincte acuminata, tenuia, exsiccata circ. 30-100 μ.

Ulmus glabra, var. *montana* Lindquist, nov. var.

Verisimiliter synonymae: *U. campestris* Miller, 1768. *U. montana* Stokes, 1776; Smith, 1807; Reichenbach, 1850. *U. scabra* sub-sp. *montana* Koch, 1872 (?).

Arbor cortice saepe crassiore, ramulis junioribus (2-5-ennibus) subglabris vel glabris, lenticellis saepe numerosis. Folia lanceolata—lanceolato-ovata, apicem versus sensim angustata, indistincte acuminata quam in praecedente crassiora, exsiccata circ. 80-240 μ.

TEN DAYS IN COUNTY KERRY.

GERTRUDE FOGGITT.

Kerry is a favoured land, with a flora as interesting as the scenery is enchanting. It was in search of some of her unique treasures, more especially certain of the Hieracia, and the Saxifrages of Brandon Mountain, that we made a ten days' expedition thither in June of last year. The better to accomplish our purpose we took our car with us—a very wise proceeding as it proved, for distances are considerable, and trains, even when they exist at all, are of the slowest and fewest. We found it easy enough to transport a car to the Free State, entailing only the filling up of innumerable forms and the deposit of £10, speedily returned, while the main roads proved to be excellent, and even the by-roads not too bad.

We crossed to Kingstown, and the first night was spent at Limerick, which gave us the opportunity of seeing the acres of *Scirpus triqueter* beside the Shannon, right in the town itself. It was delightful to see the plant in quantity and all fresh and clean, having before only paddled in Thames mud for a few dirt-encrusted specimens, or narrowly escaped sliding down the steep slippery banks of the Medway or the Arun. There seemed to be no *Scirpus carinatus* with it at Limerick, the reason, I suppose, being that the other parent, *S. lacustris*, is here replaced by *S. Tabernaemontani*.

Then on to lovely Killarney, where the paler foliage of the *Arbutus* (in red berry) stood out conspicuously among the other trees. *Euphorbia hyberna* fringed the roadsides; both Hymenophyllums hung from rocks all starred with *Saxifraga Geum* and *umbrosa*, and quantities of *Neottia Nidus-avis* of quite enormous size grew beneath the woods. Also there was the Killarney Fern in quite delightful quantity, but, perchance, it were wiser to give no nearer direction. One of our first objectives was the Laune River, where we sought for *Potamogeton nitens*. We tried for it in several places, finding the plant in many forms, but it was either not flowering at all or the flowers had been eaten off, and only near Beaufort Bridge did we hit on one perfect specimen.

We did not stay at Killarney, but continued on that same day by the finest drive, surely, in Ireland, through Windy Gap with its glorious view of the Reeks, to Kenmare, where we made the comfortable Great Southern Hotel our headquarters for three days. Our first excursion was to the Lower Lake of Cloonee for *Sisyrinchium angustifolium*, there in great abundance and beauty. *Elatine hexandra* was on the shore, and *Bartsia viscosa* along the edge. Two days later was a longer excursion to Derrynane, by Blackwater Bridge and Sneem, between hedges glorious with *Fuchsia* and thickets of *Osmunda*. *En route* we halted by the long narrow roadside Lough of Fadda, where *Eriocaulon septangulare* was in abundance and *Isoetes echinospora* showed star-fish like beneath the water in the shallow parts. In a bog on the opposite side of the road was *Utricularia minor* in quantity.

We stopped near the school-house at Glenlough for *Carex punctata*, which we knew grew in a marshy field there, and at a wayside marsh at Castle Cove, where the American "Tear-thumb" (*Polygonum sagittatum*) yet lingers. Originally introduced in American grain at a mill now long since disappeared, it still persists, and, oddly enough, has worked its way upstream at least a mile to wet meadows above, whose stone and turf hedges are fringed with *Lastraea aemula*, and where *Osmunda* grows in forests. As we neared Derrynane we began to see *Simethis bicolor* among the smooth grey rocks on the landward side, and as we turned the corner at West Cove it was in really great plenty just off the road. It is pleasant to note that so rare and beautiful a plant runs no risk of extermination. *Asplenium marinum*, *Carex extensa*, and other uncommon sea plants were on the coast hereabout.

But it was to hunt Hieracia that we had primarily come to Kenmare, and by a most merciful dispensation of Providence the rarest of these seem to frequent certain bridges in the neighbourhood which afford well-marked localities easy to identify. Morley's Bridge over the Roughty River was our first objective, a high and beautiful structure gracefully spanning a swift and rocky stream. Here was growing *H. sparsifolium*, but we looked almost fruitlessly for *H. Scullyi*, there recorded. At Poulgorm Bridge, another very lofty structure over the Clydagh, *H. sparsifolium*, var. *oligodon* (Linton), was obtained almost at risk of one's neck, but we had to retrace our steps to Drohidnagower Bridge, again over the Roughty, before we found *Scullyi*—a most attractive plant—in quantity.

That afternoon we left the high road at Blackwater Bridge and embarked on a beautiful but exciting track which led us up and up among the mists to Ballaghbeama Gap—a very high pass among the mountains, where *Saxifraga hirsuta* and *Pinguicula grandiflora* grew upon tho dripping rocks. From here the road dropped down, in desolate country, to Bealalaw Bridge over the Caragh River, Glencar. On this bridge *H. orimeles* lives a lonely life, but in profusion.

But our chief objective was the ascent of Brandon Mountain for the famous Saxifrages there only to be found. For this expedition our party was reinforced by those indefatigable hunters, Lady Victoria Russell and Miss Vivian, and we shifted our headquarters to Dingle, a remote and typical Free State town. Brandon Mountain, 3127 feet high, stands a mighty rampart to the south-east coast of Kerry, and is dedicated to the famous Irish saint Brandon (or Brendon), for whom it is claimed that he discovered America a thousand years before Columbus was ever thought of.

It was certainly a coincidence that of all the days of the year we should have hit—all unknowingly—upon St Brandon's day (June 29) to ascend his particular hill. It proved a day of rare beauty in a season when fine days were few, and we motored out to the little village of Ballybrack, from which the ascent begins, and breasted the hill whose grassy slopes seemed destitute of any flowers whatsoever. Unwittingly we marvelled at the well-marked track up this desolate mountain and the huge cairn of stones a few hundred feet below the summit, to which we also (luckily as we afterwards thought) were minded to add our tribute. After this the ascent became steep and toilsome, but soon Miss Vivian spied under a rock the first of the four treasures we came to seek, *Saxifraga sponhemica*. Soon after this the summit came into view with its Holy Well and cairn, on and around which was growing *Saxifraga groenlandica* in small but well-marked patches (also, be it said, *Saxifraga umbrosa*). It was here, too, that we became aware of the import of the day we had chosen, for the first members of a great concourse were already arriving, and soon on all sides we saw the pilgrims of St Brandon swarming up the hill to circle around the Holy Well, repeating their orisons to his praise. Ultimately they proved very useful to us since they showed us where practically the only path leads to the other side of the summit. For Brandon Mountain, looking so grassy and tame from Ballybrack, is behind sheared away into huge perpendicular precipices of sheer rock, where only in two places is it possible to scramble very steeply down to the broken gronnd and lake far below. For which reason let no botanist attempt the mountain save on a clear day, or evil may well befall him.

Growing upon the rocks of this precipitous side was abundance of *Saxifraga rosacea*, more *sponhemica*, and a much less quantity of the fourth and most attractive saxifrage which bears Dr Druce's name.

We were indeed blessed in our day, for next morning brought rain and low mist, so that we could see scarce a yard before us as we motored over the lovely Connor Pass. Only once did we stop to pick, almost at a venture, on the streaming rocks, *Saxifraga hirsuta*, which there abounds. We reached sea-level again at Castle Gregory, where are a range of remote and highly attractive sand dunes, among which it was a great joy to find quantities of *Arabis ciliata* along with any number of less rare dune plants. We lunched at Tralee, and, having some time on hand, ran out to Ballybunnion in search of *Scirpus parvulus*. And there it was, pricking its way upwards through the mud flats on either side of the big bridge over the river Cashen, but too early to be in flower.

This was practically the last of our Kerry hunting, but we had one more happy day of Irish botanising in Co. Wexford while waiting for the Rosslare-Fishguard crossing. First we sought the shingly shore of Lady Island Lake, where the acres of *Diotis* with its white flannelly leaves made an unforgettable sight, though the flowers were only in early bud. A very few miles away a long stretch of rough, rushy meadow land, bordering an estuary, was as golden with the handsome yellow flowers of the American *Sisyrinchium californicum* as a May meadow with buttercups—its origin in that lonely spot a mystery worthy of a botanical Sherlock Holmes.

Lastly we spent some enjoyable hours among the long range of sand dunes and low-lying meadows (full of sheep-ticks be it said) north of Wexford Harbour. A fine dune flora was there—*Epipactis palustris*, *Orchis incarnata* and *praetermissa*, *Chlora*, *Juncus acutus*, etc.; but we had not time to walk as far as Raven Point for the *Equisetum Moorei* we hoped for. Positively our last flower in Ireland was *Cerastium apetalum* between the sleepers of the railway that bore us to the landing stage—and home.

FLORA OF THE STORDAL IN NORWAY.

A. W. TRETHEWY.

I fished the Stor River from the middle of June till the last week of August in 1931. It runs into the Geiranger Fjord on the west coast, about half-way between Aalesund at the bottom of the fjord and Geiranger at the top. Sport was bad because salmon, grilse and sea trout were much less plentiful than in the two previous years, so I had plenty of time to spend in looking for wild flowers, the second string to my bow in Norway. I searched the valley of the river from the fjord to the waterfall about ten miles up the stream, which is as far as the sea-fish can go. The valley is, on the average, about a mile broad. Half is under the plough and half is woodland or hay meadow. The flora is not exceptionally interesting.

Arnica montana L., from which the medical arnica is made, is very abundant. It is a handsome golden-yellow composite, with opposite branches and leaves, up to two feet in height, bearing several flowers with broad rays, sometimes three inches across. It is cut with the hay in July or August. The local name is Tobak (tobacco). *Ranunculus platanifolius* L. was also plentiful.

There were a few shrubs of *Sorbus fennica* Kalm in the woods, and some in the gardens were used as hosts for grafting pears and apples, like crab apple used for stock in England.

In one spot on the shingle by the river, on the right bank near the tail of Lady Pool, I found some plants of a Lupine, just the same sort of place in which I have seen it on the Scotch Dee. The flower had gone, but in one case the stem, leaves and pods remained. I took this plant to the Natural History Museum, but sent a leaf and a pod to Professor Jean Holmboe, of Oslo, who thought it must be *Lupinus polyphyllus*, a species cultivated in Norwegian gardens. There is no garden near the spot, but the seed could have been washed down a stream which joins the river close by, coming from the road. It is the first time I have seen a Lupine wild in Norway.

As on the Sundal, I found *Silene acaulis* L. growing at sea level close to the fjord, but not *Astragalus alpinus* L., which is common on the lower reaches of the Laerdal, Gula and Sundal. Nor did I see *Saxifraga cotyledon* L. or *Myricaria germanica* (L.).

The most striking feature of the valley was the extraordinary abundance of Hieracia of the meadow and woodland types. Some of them are, I believe, similar to the species found in the north of Scotland, but I do not know enough about this difficult genus to commit myself to any attempt at identification. The range of forms seemed unusually wide, so I gathered a large number of plants, pressed them, and brought them back for the Natural History Museum in Cromwell Road without classifying them. This is what I did in 1930 with specimens of the same genus found by me at an altitude of 3000 feet in the Telemark, near the Hardanger Fjord, south of Bergen. I understand that after they have been identified tentatively at South Kensington they are sent through the herbarium of the Oslo University Museum to the Norwegian expert for his opinion and that this work may eventually facilitate the naming of the British species.

There was a daily service by motor car up the valley to a saeter on a branch of the river at a height of 1200 feet. I went there several times and climbed up to about 2000 feet, looking for alpine plants without any great success, only the usual kinds—*Ranunculus glacialis* L., *Cerastium trigynum* Vill., *Arabis alpina* L., etc. I certainly did find *Gentiana nivalis* L. and *Andromeda hypnoides* L., which are local rather than rare. The latter had an uncommon habit—it did not trail over rocks but grew in patches like *Silene acaulis*, with beautiful short-stalked pearly flowers more numerous and conspicuous than usual. Some Norwegians who climbed for other purposes up to 5000 feet brought me specimens found there, but nothing more than I had found myself, so it does not appear that I missed much. I collected some Hieracia on the high ground in the same way as in the valley.

This was my fifteenth visit to Norway and my first was in 1894. We were stopping at a hotel this year, not in a farmhouse as I have generally done. From our window we could see the fjord, and sometimes a big liner of 10,000 to 15,000 tons passed up the narrow channel, taking tourists to see the Geiranger waterfalls. There was practically no traffic of this kind in the old days, at least in ships of other nations, and it cannot benefit the Norwegians much as compared with the visits of fishermen who rent the water, and generally the farmhouse, besides purchasing their food and employing boatmen or gaffers and domestic servants. Our sport is getting worse and worse owing to over netting. The big liners in the fjord reminded me of 1913, when I fished the Laerdal. One morning at the end of July I climbed over a low ridge on my way down the river to our lowest pool, which was tidal. When I reached the top of the ridge and looked down into the narrow channel of the fjord, to my amazement I saw a large armed cruiser. It was a German warship, part of the Kaiser's escort. He was paying a visit to the Norwegian fjords and was not altogether a welcome guest. He did me some good, however. We had caught nothing in that part of our water for a week or two, but that morning I got three salmon, and my belief is that Behemoth caused enough disturbance to frighten up the river fish that had been lying in salt water. Anyhow, we gave one of the fish to the ward-room mess to promote international good feeling, as we thought in those days. This reminds me again of a Sunday morning at Barnstaple after 1918. I was fishing the Taw in April, but did not fish on Sundays. I looked out of my window about 8 o'clock into the street and saw pass in front of me several elephants and camels.

For a moment I thought I was back in India and looking at part of some sportsman's camp equipage returning from a shikar trip. Then, as I was regarding it as a hallucination, the truth flashed across my mind, it must be part of a circus, as indeed it was, on the way to Bideford. But to return to the Stordal. Is this my last visit to Norway, or shall I find myself at Hull or Newcastle next June en route? The fishing gets worse and worse and even my second or botanical string is getting frayed. Collecting Hieracia, which one does not understand, for want of more interesting specimens may be useful work, but it resembles netting rather than angling.

A VISIT TO MOROCCO, 1931.

A. W. Trethewy.

Early in 1931 I travelled for about three months in Tangiers and French Morocco searching for wild flowers, but not getting off the beaten track. My object was to spend the first three months of the year comfortably in a pleasant climate with sufficient occupation to escape boredom and without incurring much expense or undergoing great fatigue. If the trip had been made later in the year the results would have been better, but the most trying part of the English winter would not have been avoided. The journey from London to Tangiers takes only four days, and I know of no country where so many plants foreign to the British Isles can be found at this season without a much longer journey. The voyage to the Canaries or Madeira occupies about the same time, but their area is much smaller, and their flora has been more studied. I gathered that Morocco was not so well represented in the Kew herbarium and its specimens more welcome there. It was satisfactory that the whole of my collection was accepted *en bloc*. I attached nearly 500 numbers to specimens and though the same number sometimes covered several plants or pieces of plants, owing to differences in the stage of growth, the same species was at other times represented by several numbers owing to variations of habit or differences of locality. Making a very rough calculation, I should say that there were more than 450 species, and over 1000 specimens with or without labels. Mr A. R. Horwood, who identified them at Kew, has kindly prepared a separate list of those species which he considers to be the rarest, and only those contained in his separate list are mentioned by name in the body of this paper.

After spending a few days at Tangiers I went by rail to Casablanca, the terminus of the line along the coast, thence further south by motor bus to Mazagan, Safi, and Mogador. All these places are on the sea, and it was not till reaching the last that I found the climate warmer or the vegetation more advanced than at Tangiers. It was possible to go on to Agadir, as far as it was comfortable or safe to go then, but I decided to stop, thinking that the results were not likely to justify the trouble of the journey and the roughness of the accommodation. After a long stay at Mogador, I returned to Casablanca, halting a few days there and at each of the other places mentioned south of it. Then I went to Fedhala and Kenitra, both of which are on the railway north of Casablanca but south of Petit Jean, the junction for Tangiers and Fez. Without staying at Petit Jean I went on to Meknes, on the line to Fez, put in about a week there, then carried on to Fez, and after a longer stop returned to Tangiers by rail, whence I sailed to England.

In about the same period of 1930 I had covered nearly the same ground, but then I stopped at Rabat on my way to Casablanca, and from Casablanca I made a side trip inland to Marrakech instead of going south along the coast to Mogador. The collections of the two years did not overlap nearly so much as might have been expected. I did not take this year the same species again as I got last year unless there were special reasons for repeating the item, but the number of new kinds more than made up for the old ones that were missing. This is certainly not the result that might have been expected as I was slightly earlier in 1931 and vegetation less advanced than in 1930. Where there are many species the relative outturn is very difficult to explain. It seems to depend just as much on occasional variations of weather as on the general character of the season. I may be getting out of my depth, but it seems to me that a good yield of one kind and a bad one of another on the same ground may be related as cause and effect and not be independent; moreover, that the results of previous years may have to be considered. The question is intricate even for the farmer who has worked the same land all his life; for the wandering collector it is insoluble.

I shall now give an account of my finds at each place with dates of my visits and some description of localities. If any reader wishes for more detailed information to help him in the search for any particular species and writes to me at Artillery Mansions, Victoria Street, London, S.W.1, I shall do my best to supply it.

Tangiers. I arrived at the end of December 1930 and stopped for the first few days of January 1931, getting specimens Nos. 1-19, including:—1, *Andryala Cossyrensis* Guss.; 2, 3, *Calendula bicolor* Cav.; 6, *Ranunculus Ficaria* L., var. *intermedia* Ball.; 7, *Cytisus tridentatus* Vukot, var. *lasiantha* Boiss.; 12, *Scilla monophylla* Lam. It was too early for most things except field weeds.

I returned on March 24th and stopped for the first few days of April 1931, getting specimens, Nos. 375-491, including:—375, *Erodium Botrys* L.; 377, *Ornithogalum unifolium* Gmel.; 379, *Ornithogalum orthophyllum* Ten.; 386, *Helianthemum (Fumana) glutinosum* Benth., var. *viride* Ten.; 387, *Erodium cicutarium* L'Hérit., var. *numidicum* Poir.; 388, *Antinoria insularis* Parl.; 389, *Alsine emarginata* Brot.; 393, *Cynoglossum clandestinum* Desf.; 396, *Hyoseris radiata* L.; 399, *Astragalus*, cf. *Bourgaeanus* Coss.; 400, *Aristolochia baetica* L.; 401, *Lythrum flexuosum* Lag.; 405, *Astrocarpus Clusii* J. Gay; 410, *Armeria ? simplex* Pomel, but leaf margin not ciliate; 420, *Biserrula Pelecinus* L.; 424, *Erodium cicutarium* L'Hérit., small form; 428, *Thapsia garganica* (L.) Cass., broad leaves; 434, *Araujia albens* Don; 444, *Helianthemum Tuberaria* Mill.; 445, *Reseda media* Lag.; 447, *Festuca caerulescens* Desf.; 450, *Erica umbellata* L.; 453, *Ranunculus muricatus* L., var. *major*; 454, *Simethis bicolor* Kth.; 457, *Scorzonera (Podospermum) laciniata* L.; 464, *Scilla mauretanica* Schousb.; 466, *Scrophularia sambucifolia* (L.) Dur.; 470, *Cistus florentinus* Lam.; 474, *Lavatera trimestris* L.; 477, *Vicia vestita* Boiss.; 479, *Ranunculus macrophyllus* Desf.; 481, *Malope malacoides* L.; 483, *Thymus ciliatus* Benth.; 485, *Polygala ? baetica* Wk.; 487, *Bellis sylvestris* Cyr., var. *pappulosa* Boiss., very large; 488, *Cistus populifolius* L.; 491, *Cytinus Hypocistis* L.; 492, *Malcolmia littorea* R. Br.; 494, *Scrophularia sambucifolia* (L.) Dur.

Near the town of Tangiers the best localities are:—(a) The Plage with the fields and marshes behind the railway station, extending to the houses of the town and the foot of the hill which towers above the station next to that of Tangiers itself, and has a big white villa at the top of it. (b) The slopes of the hill mentioned in (a), especially near the top. (c) The fields on both sides of the road leading from the terminus of the Bueyes auto-bus to the golf course, most of the plants here are field weeds, and they begin to flower very early in the year. (d) A continuation of (c) the land on both sides of the road from the approach to the golf course up the hill towards Cape Spartel; at the top of the hill another road from Monte comes in. The best spots are the top of the hill and the bottom of the hill between the road and the stream which forms the boundary of the course.

Under the guidance of Mrs Kay, widow of General Kay, R.A., who was stopping at Tangiers for the winter, I visited several places at a greater distance than those mentioned above. She takes a great interest in flowers and kindly accompanied me in her car on several occasions. I may mention "the Caves of Hercules" near Cape Spartel. One passes a marsh, then some dry, undulating, bare ground, and finally undergrowth of Cistus bushes, all of which tracts we found productive. On the way to the pig-sticking place a marsh proved fruitful, and beyond it some fields near a Spanish outpost. It was too wet to reach the pig-sticking place itself, but I believe that in fine weather it thoroughly deserves a visit. Mr Harris's garden close to the sea beyond the railway contains some interesting weeds, carices and grasses, in the uncultivated parts. Admission is free, and it is not likely that any objection would be taken to the gathering of wild plants provided that the cultivated plants were untouched. Tangiers on the whole seems to me as good a place for flowers as any other I saw in Morocco.

Casablanca. I stopped on 5th and 6th January 1931 on my way south from Tangiers, but I found I was too early. I got only specimens 20-22, including:—20 and 21, *Romulea bulbocodium* L., var. *grandiflorum* Tin. The Plage between the railway station and the sea is the best locality near the town.

On my way back I stopped about three miles from Casablanca at the Hotel Anfa, on high ground more than a mile from the sea, surrounded by fields and waste land, from February 13th to 20th. Here I got Nos. 155-165, including:—158, *Picridium maroccanum* Ball; 159, *Muscari neglectum* Guss.; 161, *Diplotaxis siifolia* Kze.; 163, *Anacyclus radiatus* Pers., var. *ochroleucus* Ball. I found Capt. St George Whyte stopping there, and he very kindly sent to me in March some other specimens which he found near the sea after my departure. I believe that this locality would repay a later visit. It is easy to work and there is plenty of ground of various kinds.

Mazagan. On my way south I stopped here from January 7th to 12th, finding Nos. 23-34, including:—Nos. 24, 25, *Dipcadi mauritani-*

cum Drummond & Wright; 28, *Romulea grandiscapa* Gay; 31, *Androcymbium punctatum* Baker; 33, *Picridium gaditanum* Willk. *Dipcadi* and *Androcymbium* were common, especially the former, which was often thickly covered with small grey maritime snails. The latter closely resembles a Crocus except that its leaves accompany the flowers. On my return I was here for a few days in the middle of February 1931, and got specimens 148-154, including:—153, *Celsia Barnadesii* Don (=*C. laciniata*); 154, *Fagonia cretica* L.

If I come to Mazagan again it will be a short visit to two places which can be seen the same day. The first is the Valley of the Oued (river) at Azemmour on the road from Casablanca to Mazagan. The second is the tract, on the south-east of the same road, half-way between Azemmour and Mazagan, managed for experimental cultivation by the Prison Department. A permit has to be obtained for access to the second. I should apply for it through the British Consul at Mazagan. The middle of March would be quite soon enough.

SAFI or SAFFI. I stopped here from 12th to 15th January 1931, getting specimens 35-41, including:—37, *Genista monosperma* Lam. It was too early and the weather was wet. A very common plant in the Mahomedan cemeteries here is *Tiarta* (*Withania fruticosa* Boiss.). "May the *Tiarta* soon grow over you," is an Arab curse.

On my return I stopped here from 6th to 9th February 1931, getting specimens 121-147, including:—123, *Helianthemum ellipticum* Pers.; 125, *Fagonia cretica* L., high shrubby form with dark flowers; 126, *Calendula suffruticosa* Vahl; 134, *Plantago amplexicaulis* Cav.; 135, *Malcolmia ramosissima* Desf.; 136, *Romulea grandiscapa* Gay; 140, *Allium subhirsutum* L.; 141, *Linaria Tournefortii* Poir., var. *minor* Lge.; 147, *Antirrhinum tortuosum* Bosc. Dr and Mrs Badger, of the Medical Mission, take a keen interest in the flora and gave me much help, but it was too early to find many flowers except along the face of the cliff below the Marabout of the Sidi bu Zid, a little way beyond the official residence of the British Consul north of the town. The cliff rises steeply from the sea to the Marabout and is a sun-trap with paths leading along its face from south to north.

MOGADOR. I came here on 16th January 1931 from Safi, and stopped till February 6th, on which day I returned to Safi. I got specimens 42-120, including:—50, *Sonchus tenerrimus* (L.) DC., and a small form resembling var. *maritimus* Ball: 56, *Polycarpaea nivea* Ait.; 66, *Linaria sagittata* Poir.; 67, 70, *Andryala aff. ragusina* (L.) DC.; 68, *Odontospermum odorum* Sch. Bip.; 71, 72, cf. *Andryala mogadorensis* Ball; 79, *Cheiranthus semperflorens* Schrad.; 82, *Aristolochia longa* L.; 86, *Orobanche tetuanensis* Ball; 90, *Nonnea phaneranthera* Viv.; 97, *Viola arborescens* L.; 99, *Odantospermum imbricatum* Ball; 102, *Picridium tingitanum* Desf.; 103, *Argania sideroxylon* R. & S.; 104, *Leucojum trichophyllum* Schousb.; 105, *Anagallis collina* Schousb.; 106-108, *Romulea grandiscapa* Lowe; 118, *Nolletia chrysocomoides* Coss.

Mogador is surrounded on three sides by the sea or barren sands. There is really only one exit, branching at various distances from the town. To look for flowers one has to walk or drive along a road for some distance and then search on a sandy soil among scrub jungle. There are rivers and water courses which can be followed. All the country is much the same. It is difficult to give directions for guidance. On the whole I found the tract round the village Diabat and to the south of it near the intake of the water supply the most productive. The Misses Broome, who have lived at Mogador for years, take a great interest in the flora and gave me much help.

I have described above how I turned back from Mogador and revisited the places up to Casablanca on my way north. On February 20th, 1931, I went from Casablanca (Hotel d'Anfa) to Fedhala, a small town on the sea coast and railway about ten miles north of Casablanca, a thriving place with a busy port and a salt manufactory. It all belongs to a French Company who, in addition to the commercial business, have made it a pleasure resort for Casablanca. It is very crowded with bathers in the summer, and for the last few years attempts have been made, without much success, to attract English visitors in the winter. The Company has started a large hotel, the Miramar, which is kept open during the winter, with accommodation for 80 visitors, and a golf course of nine holes in charge of an English professional. I stopped there in 1930 and 1931 for about a week each year, and in 1930 was for some days the only visitor at the hotel. In 1931 there were several English people besides myself, including Miss Hooker, the daughter of Sir Joseph Hooker. She took much interest in my work for Kew and made some notable contributions when we met again at Fez. The manager of the hotel in both years was M. T. Maef, a Frenchman, who speaks English well and has been for some time in London. He was most obliging and did all he could to help me. It is an excellent centre for botanical work. The only trouble is that no cars or carriages can be hired. M. Maef, in 1930, arranged a trip for me with a local tradesman who was visiting farms to deliver goods. In 1931 he had a car of his own which he kept as a private speculation. He took me as a passenger for several afternoons on very reasonable terms. I got in this neighbourhood Nos. 166 to 216:—Nos. 166-186 at Fedhala itself, chiefly on and near the golf course and on the beach near the hotel; 187-199, from the Cascade, a place which, with Casablanca and Fedhala, makes an equilateral triangle more or less, and is much frequented on holidays; 200-216, from forests on the Fedhala-Boulhaut road, and at Boulhaut itself, a town about 15 miles distant. The following numbers deserve notice:—167, *Malcolmia littorea* R. Br.; 173, *Erodium cicutarium* L'Hérit., var. *bipinnatum* Cav.; 174. *Rumex lacerus* L.; 180, *Armeria mauritanica* Willd.: 182, *Teucrium fruticans* L.; 183. *Nonnea phaneranthera* Viv., colour form, yellow green, similar to plants collected by Hooker & Ball, seen by me on the golf links, the only form found there, and seen by me nowhere else in Morocco; 184, 185, *Sonchus*, cf. *arborescens* Salzm.; 190, *Nonnea*, cf. *micrantha* Boiss. & Reut.; 194, *Smilax* *aspera* L., var. *mauritanicum* Desf.; 201, *Astragalus baeticus* L.; 202, *Thrincia tuberosa* DC.; 203, *Anemone palmata* L.; 208, 209, *Biscutella Apula* L.; 215, *Orchis Morio* L.; 216, *Orchis tridentata* Scop. If I ever go there again I shall pay more attention to a tract on the Boulhaut road, where it crosses a big river by a high bridge soon after crossing the railway by Fedhala Station, from the far bank over the bridge along the road for a mile or more up to a big French vineyard. At my request M. Maef took Miss Hooker there.

MAMORA FOREST. February 27th, 28th, 1931, I spent at Kenitra, a town some miles north of Rabat on the coast and the railway towards Petit Jean, on the edge of the forest, which stretches back half-way to Rabat. In 1930, I went to the forest by rail from Rabat for a few hours and did well enough to think it advisable to make a stay for a day or two at Kenitra in 1931. The result was not quite satisfactory. There was certainly much vegetation but little variety, and few new species. The trees are all cork oak like those at Boulhaut, but there is more open ground than at Boulhaut. I got Nos. 217 to 240, including:—218, *Armeria simplex* Pomel; 221, *Malcolmia Broussonetii* DC.; 222, *Linaria bipartita* Willd., var. *brevipes* Ball; 223, *Gagea fibrosa* Roem. & Sch.; 224, 225, *Leucojum trichophyllum* Schousb.; 233, 234, *Passerina virgata* Desf., many forms; 236, *Linaria simplex* DC.; 237, *Hypochaeris leontodontoides* Ball; 238, *Ornithogalum orthophyllum* Ten.; 239, 240, *Orchis Morio* L.

MEKNES. From Kenitra I went to Meknes on March 1st, 1931, and stopped there about a week at the Transatlantique Hotel. It is a fine building, stretching along the high ground above a stream on the far slope of which is the town of Meknes with its many large mosques, each of which has the characteristic four-sided tower so frequent in parts of Morocco with its peculiar, uncompromising aspect. These buildings were made a few hundred years ago by Christian prisoners. At sunset, especially from the hotel veranda, the scene presents a weird view, grim and minatory.

Ye shall take no use for your money, nor your faith for a ransom sell;
Ye shall make no terms with the infidel, but smite his soul to hell.
The Old Pindaree.—Sir Alfred Lyall.

About twenty miles north of Meknes are the ruins of the Roman town of Volubilis, still in a good state of preservation. The old approach road from a distant seaport was pointed out to me, and I could imagine a legion marching in through a neighbouring defile on its way to relieve part of the garrison. This was no mushroom town. It must have lasted for centuries and been abandoned only when the pressure of the barbarian hordes obliged the withdrawal of troops for concentration in the imperial city. The ruins seemed to contain some interesting plants, though it was too early for good specimens. I should not be surprised to find traces of the Roman horticulture.

In Meknes is a chemist's shop kept by a Mr Powell, an Englishman, who spends his time between Meknes and Hyères in the south of France.

He knows a good deal about the local flora, is acquainted with the French botanists, and in his own subject—Lepidoptera—has acquired an international reputation.

I went to Volubilis for an afternoon and got Nos. 241-248, including:—241, *Arenaria spathulata* Desf.; 243, *Diplotaxis auriculata* Dur.: 246, *Linum Munbyanum* Boiss. & Reut.; 247, *Andryala laxiflora* DC. At Meknes itself, I got Nos. 249-267, including:—251, *Linaria Tournefortii* Poir., var. *minor* Lge.; 252, *Linaria*, cf. *reflexa* Desf.; 255, *Ranunculus Ficaria* L., var. *grandiflora* Sch.; 257, *Arum hygrophyllum* Boiss.; 258, *Ranunculus macrophyllus* Desf.; 259, *Carex fissirostris* Ball; 260, *Chrysanthemum* (*Otospermum*) *arvense* Salzm. The best ground near Meknes is below the Transatlantique Hotel on the side remote from the town. Go down the Volubilis road and at the foot of the hill on which the hotel stands you will find a quarry with an octroi post close to a stream. Walk on the road towards Volubilis with the stream on your right hand and search the slopes, fields, and waste ground on both sides of the stream, also the market gardens if nobody objects. Another place is on the other side of the town. Go right through the town from the hotel to the Aguedal and Mulay Ismail's storehouses, then search for flowers by a stream just beyond these two places.

FEZ. From Meknes I went to Fez by rail, but if I had been going later in the year I should have been inclined to go by road via Volubilis in a private car, looking at the plants on the way. There is, I believe, some good ground between Volubilis and Fez on a hilly part of the road which I have never seen, so I do not say any more about it fearing to mislead the reader by giving incorrect information. It will be worth his while if he is on the spot to make inquiries. At Fez I was unlucky with the weather. I had been there in the previous year and done well. This year, being rather later, I expected great things, in spite of the season being more backward, but the rain upset everything. The soil is chiefly stiff red clay of the kind which was described as "loving" by the midland agriculturists years ago when it clung to our boots out partridge shooting. It could be freed from the roots of the plants with difficulty, and even extrication of roots from the ground was tedious and fatiguing. The vegetation was so wet that drying was difficult, and even when there was a hot sun to dry the plants satisfactorily there were often damp days afterwards, which undid the work in spite of all precautions. Considering these difficulties the collection was not bad, though under favourable conditions it would have been a good deal better. I got Nos. 268-374, including:—272, *Sisymbrium erysimoides* Desf.; 278, *Ranunculus flabellatus* Desf.; 279, *Biscutella eriocarpa* DC.; 281, *Convolvulus gharbensis* Batt. & Trab.; 282, *Euphorbia pubescens* Vahl; 283, *Nonnea phaneranthera* Viv., with unusual corolla lobes; 292, *Diplotaxis auriculata* Dur.; 293, *Psychine stylosa* Desf.; 297, *Chrysanthemum macrotum* Dur.; 298, *Thrincia tuberosa* DC.; 302, 352, *Triguera ambrosiaca* Cav.; 307, 307A, *Fritillaria oranensis* Pomel; 308, *Picridium intermedium* Sch. Bip.; 313, *Linaria Tournefortii* Poir.; 318, *Hyacinthus romanus* L.; 322, 322A, *Scrophularia sambucifolia* L.; 323, *Cen-*

taurea seridis L.; 331, *Anchusa*, cf. *atlantica* Ball; 338, 338A, *Centaurea seridis* L., var. *decurrens* Batt. & Trab.; 341, 341A, *Sonchus tenerrimus* L., form near var. *maritimus* Ball; 343, *Cynoglossum clandestinum* Desf.; 345, *Lychnis* (*Melandryum*) *macrocarpa* Boiss. et Reut.; 348, *Narcissus* (*Corbularia*) *Bulbocodium* L. (from Talouat, see No. 349); 349, *Morisia hypogaea* Viv. (This I did not find myself; it was brought to me at Fez by Miss Hooker, mentioned above, from Talouat, where she went on a sight-seeing trip); 356, *Fumaria bracteosa* Pomel; 366, 367, *Solenanthus lanatus* DC.; 372, *Carex stenophylla* Wahl.; 374, 374A, *Ranunculus Ficaria* L., var. *grandiflora* F. Sch. The best localities need not be mentioned, because they are all known to Miss Cooper, one of the staff of the British Consulate, who has been residing at Fez for many years, and who was kind enough to take or direct me to all the new localities which I visited in 1931. I am sure that she will be so good as to give similar help to any traveller interested in the flora who asks for her assistance. She has studied the neighbourhood carefully.

This paper is written mainly for the purpose of showing what useful contributions can be made to the herbaria of Kew and the Natural History Museum by a tourist with a smattering of botanical knowledge who goes abroad for his pleasure and does not wish to spend much money or endure much fatigue. He can have a pleasant occupation without discomfort. I have gone to Norway many times to fish and made the collection of wild flowers a second string to my bow, contributing thousands of specimens to the Natural History Museum. Before beginning to collect, one should, however, make sure that the specimens are likely to be accepted. This one can do by inquiring at the museums which are the countries or parts of countries insufficiently represented in their herbaria and whence therefore many more specimens are required. It is disappointing to spend much time in gathering and pressing plants only to find that nobody wants them. The herbaria are already well stocked with specimens from such interesting ground as the Alps. It will be difficult to find much there along the tourist routes with which the museums are not already supplied, but there are some accessible places which have been disregarded because the flora is uninteresting. Professor Jean Holmboe, of Oslo, once said to me: "You are not likely to find anything at Kongsvoll (perhaps the best ground in Norway) which we require, but send us as much as you like from Stjordal, for we have very little from that valley, as the flora is too uninteresting to attract botanists."

BOTANISING IN SICILY.

C. D. Chase.

To a botanist Sicily is a very satisfactory place to go sight-seeing in. In the Pitti and the Uffizi there are no flowers except in Botticelli's pictures, but a Greek temple in Sicily is generally set in a veritable garden of wild flowers and the ancient stones of Greek theatres and Roman amphitheatres harbour many delightful little plants quite unknown to our northern flora. All visitors to Sicily come back with glowing accounts of the beauty of the wild flowers in spring. As a matter of fact Sicily, a comparatively new country, speaking geologically, is not very rich in species compared with the south of Spain or Greece. Probably Sicily has few more species than Corsica or Sardinia; certainly less than 2000 all told. What strikes the eye of the tourist is the massed effect of huge quantities of individuals of a few showy species. Take away these few species and the result would not be particularly striking. These species are the yellow marigold (*Chrysanthemum coronarium*); two yellow Crucifers, *Hirschfeldia adpressa* and *Biscutella lyrata*; the Viper's Bugloss (*Echium plantagineum*), which varies in colour but may perhaps best be described as purple; the light blue borage and *Convolvulus tricolor*, whose three colours are blue, yellow, and white, the blue predominating. Other flowers, of course, enter into the colour scheme but these are the chief. This vivid colouring is seen to great effect in the waste ground around the temples at Segesta and Girgenti.

The following notes are the result of a fortnight spent in Sicily in the spring with a party organised by Leplay House. The tour started at Palermo and the botanists of the party made two ascents of Monte Pellegrino, which seemed the most promising ground in the immediate neighbourhood of the overgrown capital with its 350,000 inhabitants. Monte Pellegrino rises to almost 2000 feet above the Mediterranean, and the climb is well worth while for the view from the top, apart altogether from the flowers, which were not without interest. These included, besides many species with a wide Mediterranean range, *Fedia cornucopiae*, *Linaria reflexa*, *Calendula stellata*, the huge yellow Umbellifer, *Ferula communis*, *Celsia cretica*, *Medicago rugosa*, *Sedum coeruleum*, *Brassica pubescens*, *Prasium majus*, *Antirrhinum siculum*, *Tetragonolobus purpureus*, and the large grass, *Ampelodesmos tenax*. These plants are, I think, mostly confined to the southern part of the Mediterranean.

From Palermo we travelled by road to Girgenti, making a long tour to visit the temples of Segesta and Seliunte, and a very beautiful and interesting drive it was. Many plants were noted at these two places and along the roadside. Amongst them were the dwarf palm, *Chamaerops humilis*, the only member of its order which is native in Europe; it has a certain commercial value, the tough fibres of its leaves being used for various purposes; *Ophrys lutea* and *O. Bertolonii*; *Asphodeline lutea*; *Artemisia arborescens*; *Vicia narbonensis*, var. *serratifolia*; *Allium subhirsutum*; the very pretty little Iris, *Sisyrinchium*, whose blue and white flowers are so ephemeral; *Hyoseris scabra*; *Micromeria microphylla*, and, of course, various forms of *M. graeca*; *Tetragonolobus biflorus*, which is only known from the south of Italy and Sicily, and *Asparagus albus*.

At Girgenti (or Agrigento, as the present régime call it) the common species were flowering in vast abundance. On the walls of one of the temples were *Phlomis fruticosa* and *Antirrhinum tortuosum*; the latter we had seen before in one of its few French stations on the walls of the Roman amphitheatre at Fréjus. A hurried visit to the sea-shore yielded *Matthiola tricuspidata*; *Centaurea sphaerocephala*; *Orlaya maritima*: *Ononis variegata*, and *Anthemis fuscata*.

Our next centre was Enna, perched high on its isolated hill, 3000 ft. up in the very centre of the island. Owing to the altitude, vegetation was not so advanced as on the coast: indeed, some of the party complained of cold at Enna. Enna is the place where, at a remote period, Proserpine was carried off by the god of the lower regions while she was gathering flowers in the meadows. Things have altered considerably in many ways since then and there are now no flowering meads on that rather bleak summit. In the middle ages and till quite recently the place was called Castrogiovanni. It has now assumed again its classical name. The hill of Enna and Monte Altesina (nearly 4000 ft.) ten miles to the north, which was visited by some of the botanists, would doubtless have yielded more plants of interest a month or two later. Near Lake Pergusa, a short distance south of Enna, were growing *Orchis italica*; *Ophrys speculum*; *Lycium europaeum*, and *Smyrnium perfoliatum*. In the immediate vicinity of Enna we saw *Matthiola tristis* and *Hermodactylus tuberosus*, and, on the walk from Enna to Monte Altresina, *Tillaea muscosa*, no larger than in England; *Orchis tridentata* and *O. papillionacea*; *Carex divisa* (this and *C. glauca* were the only sedges we saw in Sicily), and *Pyrus amygdaliformis*.

It was a great change to come down from the mountain top of Enna, which we left in a thick mist, to the bright sunshine of Syracuse. The Hotel Villa Politi and its gardens were looking their best. The same evening we visited the Greek theatre, amongst whose stones was growing a little plant of Euphorbiaceae, *Andrachne telephioides*. Of all the places we visited in Sicily, Syracuse seemed to have the richest flora, rich, I mean, in the number of species. The best ground was the rather bare limestone between the railway and the sea to the east of the town and on the slopes of Epipolae. The following may be mentioned:—*Ornithogalum arabicum*, a very handsome plant; *Ononis reclinata*; *Teucrium capitatum*; *Malva cretica*; *Poterium spinosum*; *Smyrnium rotundifolium*; *Onobrychis Caput-galli*; *Linum strictum*; *Scorzonera deliciosa*; *Salicornia fruticosa*; *Frankenia hirsuta*; *Romulea bulbocodium*:

Hedysarum capitatum; *Centaurea nicaeensis*; and in a bean field, *Ornithogalum narbonense*; *Phalaris brachystachys*; *Bupleurum fontanesii* and *B. protractum*; *Andropogon distachyon*; *Hymenocarpus circinnatus*; *Medicago scutellata*, and *M. ciliaris*.

By the river the Papyrus is quite naturalised and the large white *Orobanche speciosa* grows.

Our last stay was at the popular resort of Taormina, not quite on the slopes of Etna but not far from that interesting volcano. Of course, an ascent to the top is out of the question in April, the upper parts of the mountain being still under snow. Anyone who wishes to gather the half-dozen or so endemic plants for which Etna is known botanically must seek them in the late summer. The lower slopes of the mountain are exceedingly fertile; even the weeds in the lemon groves and vineyards seemed larger and brighter than elsewhere.

On the cliffs at Taormina were growing tufts of *Scabiosa cretica* and shapely bushes of *Euphorbia dendroides*. Other plants between the town and the sea were *Thalictrum calabricum*, *Ajuga orientalis*, *Moricandia arvensis*, *Linaria chalepensis*, and *Aceras anthropophora*. A climb to the top of Monte Venere beyond Mola (3000 feet) was rewarded by the little orchid, *O. brancifortii*.

Altogether, in our fortnight in Sicily we saw just under 400 species.

PUBLICATIONS BY GEORGE CLARIDGE DRUCE.

FLORAS AND OTHER BOOKS.

Edited and Revised Hayward's Botanist's Pocket-Book. Editions 13-19 (inclusive), with appendices.

The Flora of Oxfordshire: being a Topographical and Historical Account of the Flowering Plants and Ferns found in the County, with sketches of the Progress of Oxford Botany during the last three centuries. Pp. lii. + 452. Parker & Co., Oxford, 1886.

—— Second Edition (rewritten). Pp. cxxxi. + 538. Clarendon Press, Oxford, 1927.

The Flora of Berkshire: being a Topographical and Historical Account of the Flowering Plants and Ferns found in the County, with short Biographical Notices of the Botanists who have contributed to Berkshire Botany during the last three centuries. Pp. cxcix. + 644. Clarendon Press, Oxford, 1897.

The Dillenian Herbaria: an Account of the Dillenian Collections in the Herbarium of the University of Oxford, together with a Biographical Sketch of Dillenius, selections from his Correspondence, Notes, etc. Edited with an Introduction by S. H. Vines. Pp. cxii. + 257. Clarendon Press, Oxford, 1907.

An Account of the Morisonian Herbarium in the possession of the University of Oxford, together with Biographical and Critical Sketches of Morison and the two Bobarts and their Works and the early History of the Physic Garden, 1619-1720, by S. H. Vines and G. C. Druce. Pp. lxviii. + 350. Clarendon Press, Oxford, 1914.

List of British Plants, containing the Spermophytes, Pteridophytes, and Charads found either as natives or growing in a wild state in Britain, Ireland, and the Channel Isles. Pp. xv. + 104. Clarendon Press, Oxford, January 1908.

—— Second Edition. Pp. xl. + 154. T. Buncle & Co., Arbroath, 1928.

The Life and Work of George Don. (Notes, Roy. Bot. Gard. Edinb., No. xii., 1904.) Pp. 290.

The Adventive Flora of Tweedside. With I. M. Hayward. Pp. xxxii. + 296. T. Buncle & Co., Arbroath, 1919.

The Flora of Buckinghamshire: with Biographical Notices of those who have contributed to its Botany during the last three centuries. Pp. cxxvi. + 437. T. Buncle & Co., Arbroath, 1926.

The Flora of Northamptonshire: being a Topographical and Historical Account of the Flowering Plants and Ferns found in the County, with short Biographical Notices of the Botanists who have contributed to Northamptonshire Botany during the last three centuries. Pp. cxlii. + 304. T. Buncle & Co., Arbroath, 1930.

The Comital Flora of the British Isles: being the Distribution of British (including a number of non-indigenous) Plants through the 152 vice-counties of Great Britain, Ireland, and the Channel Islands, with the Place of Growth, Elevation, World-Distribution, Grade, Chief Synonyms, and First Names by which the Plants were recorded as British. Pp. xxxii. + 407. T. Buncle & Co., Arbroath, 1932.

The Botany of the Upper Thames, pp. 72-127, of the Natural History of the Oxford District. Presented to Members of the British Association, Oxford Meeting, 1926.

PAPERS.

JOURNAL OF THE NORTHAMPTONSHIRE NATURAL HISTORY SOCIETY.

Contributions to a Flora of Northamptonshire: 1880-1, pp. 48, 92, 152, 179, 215, 271, 314; 1882-3, pp. 25, 50, 142, 227, 279, 315; 1884-5, pp. 26, 79, 104, 143, 179, 219, 276; 1886-7, pp. 5, 37, 116, 173, 235, 324; 1888-9, pp. 29, 117, 149, 235, 249, 309 map; 1890-1, pp. 7, 56, 65, 100, 172, 249; 1892-3, pp. 64, 136, 161, 250, 292; 1894-5, p. 5.

1898-9. pp. 19, 56, 112, 179, Botanologia of Northamptonshire; p. 281, Rubi; p. 282, Plants; pp. 135, 208, 265, Botany Notes.

1900-1. p. 13, Notes on the Flora.

1902-3. pp. 1-12, Progress of Botany and Geology during the Nineteenth Century (Presidential Address).

1904-5. p. 24, A Visit to Greece and Turkey; p. 290, Northampton Plants.

1906-8. p. 99, Northampton Notes; p. 259, Botanologia; p. 293, John Morton, with plate.

1909-10. p. 100, Botany of the Fenland; p. 221, Additions to the Flora of Fenland; pp. 132, 222, Botanologia; p. 134, John Hill; pp. 281-296, Plant Notes.

1910-11. p. 107, *Ulmus Plotii* Druce, with plate; p. 140, Japan; p. 183, John Clare, Botanologia; pp. 291-295, Plant Notes.

1913-16. p. 129, *Apium Moorei.*

1917-18. p. 116, James Dickson; p. 121, Early History of the Nat. Hist. Soc.; p. 131, Formation of Nat. Hist. Soc., with portrait.

1919-20. p. 135, *Rosa litigiosa*; p. 174, *Œnanthe silaifolia*; p. 143, Flowers and Cities of Portugal and Spain.

1923-24. p. 14, Obituary of Harry Manfield; p. 135, Hon. N. C. Rothschild.

1926. p. 214, Jubilee Celebrations; p. 217, Presentations to Beeby Thompson and H. W. Dixon.

JOURNAL OF BOTANY.

1877. p. 307, Guernsey and Northamptonshire Plants.

1878. p. 25, *Rosa mollis* in Northamptonshire; p. 306, *Aceras anthropophora* in Northamptonshire; p. 377, Casual Plants of Northamptonshire.

1879. p. 243, *Polygonatum multiflorum* in Northamptonshire.

1880. pp. 42, 79, 116, Flora of Northamptonshire.

1881. p. 91, On Oxfordshire Roses; p. 217, *Littorella lacustris* in Oxfordshire; p. 251, *Viola lactea* in Bucks; p. 251, North Bucks Plants; p. 251, *Scirpus pauciflorus* in Berks; p. 285, Flora of Northamptonshire.

1882. p. 80, Additions to Perthshire Flora; p. 247, *Carduus lanceolatus* × *palustris* in S. Hants; p. 321 (t. 233), *Lycopodium complanatum* in Britain; p. 356, East Ross Plants.

1883. p. 26, *Carduus lanceolatus* × *crispus* in Berks, *Carex axillaris* in W. Thames; p. 279, *Polypodium Dryopteris* and *P. Robertianum* in Bucks; p. 315, *Cerastium holosteoides*.

1884. p. 151, *Potamogeton nitens* in Wales; p. 248, *Euphorbia Lathyris* in Northamptonshire; pp. 248, 302, Distribution of *Callitriche obtusangula*; p. 302, *Carex stricta*; p. 348, *Juncus diffusus*.

1885. p. 274, Plants of E. Gloucester and Wilts; p. 160, Proposed Flora of Oxfordshire.

1886. p. 24, Wilts and Gloucester Plants; p. 249, Flora of Oxfordshire (reviewed); p. 370, Northamptonshire Plants.

1887. p. 182, *Falcaria Rivini*; p. 314, *Polypodium Dryopteris* in Oxon; p. 348, *Limnanthemum peltatum*; p. 348, Notes on Botanical Nomenclature.

1888. pp. 17, 116, 364, On Scottish Plants; p. 115, Nomenclature of *Sparganium*; p. 349, E. Kent Plants.

1889. p. 117, *Calamagrostis borealis* in Scotland; p. 153, *Festuca heterophylla* in Oxon; p. 200, Scottish Plants; p. 315, N. Berks Plants; p. 377, A Northamptonshire Potamogeton; p. 384, Preparing a Flora of Bucks.

1890. p. 39, Scottish Plants; p. 121, *Crepis foetida*; p. 218, *Carex tomentosa*; p. 227, Oxford Plants; p. 315, *Helianthemum guttatum*; p. 343, *Spergula pentandra* in Ireland.

1891. p. 173, Segregates of *Spergula arvensis*; p. 304, Irish Plants; p. 307, Berks Plants; p. 308, Bucks Plants; p. 377, *Acer campestre*.

1892. p. 56, *Galium sylvestre*; p. 86, *Lepironia mucronata*; p. 282, E. Gloucester Plants.

1893. p. 22, *Lagurus ovatus*; p. 183, *Sonchus palustris*; p. 184, *Euphorbia Esula*; p. 217, *Phegopteris calcarea*; p. 327, Flora of Berkshire.

1894. p. 181, *Sagina Reuteri*; p. 240, *Sherardia arvensis*.

1895. p. 24, *Cnicus tuberosus* and Wilts Plants; p. 56, *Deschampsia discolor*; p. 62, Flora of Berks; p. 153, *Arabis petraea*; p. 282, Cornwall Plants; p. 282, Plymouth Casuals; p. 314, *Melampyrum pratense*, var. *hians*; p. 316, *Artemisia Stelleriana*; p. 344, *Sonchus palustris*, *Bromus interruptus*; p. 377, *Medicago lupulina*, var.

1896. p. 41, Hieracia Records; p. 87, Westerness Plants; On "London Catalogue," 95, 271; p. 328, Berkshire Flora; Wettstein's Euphrasia (reviewed); p. 432, N. Devon Plants; p. 432, *Melampyrum pratense*, var. *hians*; p. 479, *Mimulus Langsdorfii*.

1897. p. 13, *Bromus interruptus*; p. 132, Henry Boswell (portrait); p. 284, *Tolypella intricata*; p. 313, *Nitella translucens*, *Carex elongata*; p. 362, *Vicia villosa*, var., *Potentilla norvegica*, *Caucalis nodosa*; p. 449, *Rosa sepium*, Bedford Plants, *Coronilla varia*; p. 460, Account of Oxford Herbarium; p. 491, *Deyeuxia stricta*, var. *borealis*.

1898. p. 222, *Helleborus occidentalis*; p. 225, *Fragaria muricata*; p. 227, *Poa flexuosa*; p. 274, *Dianthus deltoides*; p. 275, Bicheno's Herbarium; pp. 275 and 348, Berkshire varieties; p. 319, *Bromus interruptus*; p. 104, Flora of Berkshire (reviewed).

1899. p. 368, *Carex rhyncophysa*.

1900. p. 240, Proposed Flora; p. 501, Appointed Mayor of Oxford.

1902. p. 108, New Hybrid Grass; p. 181, Anglesey and Carnarvon Plants; p. 231, *Helianthemum Breweri*; p. 350, Kentish Plants; p. 391, Cumberland Plants.

1903. p. 103, Kent Plants. Cumberland Plants; p. 174, *Poa laxa*; p. 286, *Meum athamanticum*; p. 289, *Campanula persicifolia*; p. 350, *Valerianella discoidea*; p. 351, *Asplenium germanicum*, *Arabis verna*; p. 359, Notes on *Rhinanthus*; p. 406, *Deyeuxia neglecta*; p. 408, *Glyceria distans*, var., *Arrhenatherum avenaceum*, var., *Senecio palustris*.

1904. p. 9, S. Devon Plants; p. 26, *Poa Chaixii*, *Salsola Kali*, var.; p. 54, Westmorland Plants; pp. 65 (t. 457), 209, *Bromus interruptus*; p. 89, *Galeopsis*; p. 302, Rep. B.E.C. (reviewed); p. 309, Essex and Kent Plants; p. 313, *Scrophularia Ehrharti*; p. 385, *Aster Linosyris*.

1905. p. 14, Additions to the Berkshire Flora; p. 99, *Linaria Cymbalaria*, *Galium sylvestre*; p. 188, Spanish and Portuguese Grasses; p. 217, *Holosteum umbellatum*; p. 217, Supplement to "Top. Bot."; p. 220, *Cheiranthus erysimoides*; pp. 274, 307, Walney Island Plants; p. 313 (t. 474), *Koeleria splendens*; p. 354, British Koelerias.

1906. p. 29, Cornish Plants; p. 60, On George Don; p. 72, Essex and Suffolk Plants; p. 137, *Sagina alpina*; p. 178, *Gagea lutea*; p. 179, *Plantago lanceolata*, var. *sphaerostachya*; p. 241, *Juncus tenuis*; p. 320, *Rosa agrestis*, *Agrostis verticillata*; p. 394, Isle of Wight Plants; p. 405 (t. 483), *Salvia Marquandii*; p. 426, *Matricaria discoidea*.

1907. p. 21, *Plantago lanceolata*, var. *sphaerostachya*; p. 33, Cheshire Plants; p. 34, *Ophrys Trollii*; p. 112, Huckleberry; p. 163, *Alnus rotundifolia*; p. 164, *Stipa membranacea*; p. 211, Spanish and Portuguese Carices; p. 248, Irish Plants; p. 282, Dillenian Herbaria (reviewed); p. 380, *Calamagrostis lanceolata*; pp. 395, 419, Channel Islands Plants; p. 411, *Linaria arenaria*.

1908. p. 8, *Helleborine* v. *Epipactis*; p. 127, List of British Plants (reviewed); p. 163, La Gasca and his "Hortus Siccus;" p. 335, Welsh records; p. 384, Dorset Plants.

1909. p. 27, *Epipactis purpurata*; p. 87, *Salvia horminoides*; p. 108, *Schoenus ferrugineus*; p. 110, *Orobanche reticulata*, var. *procera*; p. 270, Followers of Man; pp. 302, 356, *Carex canescens*; p. 318, Comital Census Numbers; p. 323, *Orchis ericetorum*; p. 356, Botany of Worcestershire (review); p. 384, *Thymus spathulatus*; p. 444, Short Notes.

1910. p. 23, *Festuca maritima*, *Tilia platyphyllos*; p. 55, *Zannichellia gibberosa*, Cornish Plants; p. 56, N. Devon Plants; pp. 61, 78, Botanist's Pocket Book (reviewed); p. 78, *Rhinanthus* v. *Alectorolophus;* p. 98, British Carices; p. 164, *Salsola Kali*, var. *tenuifolia*, *Barbarea stricta;* p. 188, Plant Records; pp. 195, 233, Berkshire Plants; p. 257, Sibthorp's Lincolnshire Plants; p. 259, Durham Plants; p. 260, *Juncoides pallescens*; p. 269, Middlesex Plants; p. 281, *Spiraea Ulmaria*, var. *denudata*; p. 285, *Hieracium carenorum.*

1911. p. 23, Azores Plants; p. 66, Middlesex Plants; p. 67, Sibthorp's Plants; p. 117, *Chaerophyllum aureum*; p. 128, *Juncus Leersii*; p. 128, *Draba muralis*; p. 234, *Vicia sylvatica*, var. *condensata*; p. 235, *Euphorbia Lathyris*, *Plantago lanceolata*, var. *sphaerostachya*, *Tolypella intricata*; p. 274, Suffolk Plants; p. 276, *Potamogeton coloratus*, *Filago spathulata*; p. 300, *Orobanche Ritro*, var. *Hypochaeroides*; p. 301, *Orobanche reticulata*, var. *procera*; p. 302, Cornish Plants; 370, *Cirsium acaule* × *arvense*; p. 325, Rep. B.E.C. (reviewed).

1912. p. 76, Corbyn's Cambridge Plants; p. 97, *Allium sphaerocephalum*; p. 133, *Orobanche Picridis*; p. 201, *Alchemilla acutidens*; p. 257, *Helleborine* v. *Epipactis;* p. 259, *Ranunculus ophioglossifolius*, *Scilla campanulata*; p. 287, *Prunella laciniata.*

1913. p. 18, Linnaeus's "Flora Anglica;" p. 60, *Polygala Babingtonii*; p. 89, *Sagina scotica*; p. 103, *Sagina procumbens* forma, *Stellaria aquatica*, var. *scandens;* p. 137, *Spergularia atheniensis;* p. 225, *Iris versicolor*, Culinary Mints; p. 226, *Papaver hybridum*; p. 260, *Viola calcarea*; p. 264, Flora of Oxon and Bucks.

1914. p. 155, Druce's Morisonian Herbarium (reviewed); p. 158, Rep. B.E.C. (reviewed).

1915. p. 356, Article 45 of Vienna Code; p. 373, Greek Plants.

1916. pp. 38, 66, Greek Plants; p. 172, *Hydrilla verticillata*; p. 181, *Juncus castaneus*; p. 215, B.E.C. Report; p. 335, W. Sherard's Jersey Plants.

1917. p. 55, *Carex basilaris*, *Calamintha nebrodensis.*

1924. p. 309, *Lotus siliquosus* in Berks; p. 198, *Orchis Fuchsii* Druce.

1925. p. 138, What is *Orchis candidissima* Krocker?

1926. p. 46, "Native" British Plants.

1928. p. 122, *Rumex glomeratus*; p. 245, *Diplotaxis tenuifolia*, var. *integrifolia.*

1929. p. 22, Charlotte G. Trower (obit.); p. 26, *Scorzonera humilis*; p. 155, *Polygonum calcatum* and *Poa irrigata* in Britain; p. 159, Botany of Cyprus (abstr.); p. 217, Arthur Bennett (obit.).

1930. p. 121, *Alchemilla tenuis* in Herts; p. 346, *Carex aquatilis* in Scotland; p. 188, *Scilla non-scripta*, var. *Lacaillei*.

1931. p. 107, *Juncus "alpinus"* in Teesdale.

THE SCOTTISH NATURALIST.

1883-4. pp. 126, 176, 217, 258, The Botanical Work of George Don of Forfar; p. 229, *Trifolium agrarium* and *Carex vesicaria*, var. *dichroa*.

1885-6. p. 12, The Botanical Work of George Don of Forfar (cont.); p. 26, Botanical Notes; p. 76, Notes on Scottish Plants.

1887-8. p. 94, Review of the London Cat., Ed. 8.; p. 330, Some Additions to the Scottish Flora; p. 350, Rediscovery of *Deyeuxia neglecta*.

1889-90. p. 43, Plants of Peebleshire; p. 144, Don's Plants, *Agrostis rubra*; p. 239, *Agrostis canina*, var. *scotica*, *Pseudathyrium flexile* in Easterness.

1891. p. 91, Scotch Equiseta. *Cerastium arcticum*. Don's plant of *Ranunculus nivalis*.

THE ANNALS OF SCOTTISH NATURAL HISTORY.

1892. pp. 127, 178, Plants of Glen Spean; p. 253, Notes on English Botany, Supplement; p. 273, *Sagina alpina* in Scotland.

1893. p. 32, *Alchemilla vulgaris*; p. 122, Plants of Glen A'an, Banffshire; p. 123, Notes on some Scottish Plants; p. 250, *Rosa resinosoides* Crépin in Mid Perth.

1894. p. 58, Extracts from B.E.C. Report for 1892; p. 122, *Juncus alpinus* in Easterness.

1895. p. 35, Notes on the Flora and the Rocks of Cnoc-an-t'-Sasunnaich in West Sutherland; p. 123, *Poa humilis* in W. Ross and W. Sutherland.

1896. pp. 38, 107, Notes on the 9th Ed. of the London Catalogue of British Plants; p. 126, Scotch Hieracia in the Fielding Herbarium at Oxford; p. 259, *Festuca ovina* L., var. *supina* Hackel in South Aberdeenshire.

1897. p. 53, A Visit to the Loch of Spynie in search of *Utricularia Bremii*; p. 54, Notes on Plants observed about Forres and Findhorn; p. 55, *Caltha radicans* Forst. in S. Aberdeen; p. 127, Scotch Euphrasiae; p. 128, Scotch Carices; p. 260, Carex from Ben Lawers.

1898. p. 122, Plants of West Ross, *Rosa dumetorum* Thuill., *Poa cenisia* All., var. *flexuosa* (Wahl.), a new species of grass in Scotland; p. 242, the "Flora of Perthshire;" p. 243, *Carex xanthocarpa* Degl., *Agrostis pumila* L.

1899. p. 29, Notes on the Flora of Wigtownshire; p. 58, *Carex rostrata × vesicaria* in Glen Callater, *Deyeuxia stricta* H.B.K., var. *borealis* in Perthshire, *Saxifraga groenlandica* L.; p. 120, New Varieties of Scotch Carices; p. 185, Wigtownshire Plants, *Crataegus oxyacantha* L.; p. 186, an early Scottish locality for *Sparganium affine* Schnitzl.

1900. pp. 164, 225, Notes on the Flora of Perthshire; p. 252, *Rubus argentatus* in Scotland.

1901. p. 35, Notes on the Flora of South Aberdeenshire; p. 104, Notes on the Flora of Forfarshire; p. 121, Notes on the Flora of Argyllshire; p. 121, Notes on the Flora of Kincardineshire; p. 177, Three Species of Rhinanthus new to Scottish Flora.

1903. pp. 37, 122, Notes on the Flora of East Sutherlandshire; p. 53, Memorial to George Don; p. 54, Scottish Hieracia; p. 123, *Viola Pesneaui* in Scotland; p. 166, Notes on the Flora of Western Ross-shire; p. 226, Notes on the Flora of Eastern Ross-shire.

1904. p. 36, Notes on the Flora of Westerness; p. 114, Plants of Perthshire; p. 168, Plants of Caithness.

1905. p. 47, Notes on the New Edition of Babington's "Manual of British Botany;" p. 59, On a new sub-var. of *Poa annua* in Wigtown; p. 239, Plants of Roxburgh, Haddington and Berwick; p. 247, *Ranunculus reptans* in Mid Perth; p. 248, *Caltha radicans* in Mid Perth, *Rudbeckia laciniata* in Perth.

1906. p. 30, Two species of Koeleria new to Scotland; p. 58, Scottish Hieracia; p. 59, Scottish Carices; p. 217, Nomenclature of Plants.

1907. p. 96, Notes on the Flora of Berwickshire; p. 122, *Hieracium nigrescens*, var. *commutatum* on Ben Heasgarnich, Mid Perth; p. 241, Nomenclature of British Plants.

1908. pp. 39, 106, Plants of Sutherland and Caithness; p. 122, Notes on Plants from Scotland; p. 259, On the British Plant Lists and their Discrepancies, *Agropyron Donianum* on Ben Lawers, *Festuca ovina*, var. *alpina*, Scottish Roses.

1909. p. 96, On the British Plant Lists and their Discrepancies; p. 121, *Montia lamprosperma* Cham. in Scotland; p. 122, *Solidago* sp.; p. 258, *Carex helvola* Blytt on Ben Lawers.

1910. pp. 39, 95, Plants of some Southern Scottish Counties; p. 46, Critical remarks upon the Cyperaceae-Caricoideae as treated in Das Pflanzenreich by George Kükenthal.

1911. p. 38, The Alpine Cerastia of Britain; p. 56, *Rhinanthus Ferrieri*; pp. 96, 164, Scottish Plants chiefly from Skye, Peebles, Selkirk, and Kirkcudbright; p. 103, Scottish Hieracia; p. 251, *Montia verna* Necker; p. 252, *Castalia candida* in Scotland, *Sagina glabra* Koch in Scotland.

1912. p. 154, Linnaeus' "Flora Anglica."

THE NATURALIST.

1909. p. 97, The Oxford British Plant List.

1910. p. 128, *Helleborine atro-rubens* Druce, var. *Crowtheri*, nov. var. p. 227, Plants of the Steep Holme.

1914. p. 125, *Poa irrigata* Lindman in Britain; p. 189, *Orchis praetermissa* Druce.

1926. p. 145, *Impatiens glandulifera* and other Adventive Plants in Britain.

BOTANICAL RECORD CLUB REPORTS.

1880. pp. 168-175, Catalogue of West Ross-shire Plants (N.C. Records).
1883. p. 64, List of New Records for Kirkcudbright; pp. 65-75, Plants observed in the County of Wigtownshire (mostly N.C.Rs.).

Besides the above papers, Dr Druce was largely responsible for the N.C.Rs. of the Counties of Berks, Bucks, Oxon, Northants, Angus, Easterness, Westerness, E. Ross, Banff and S. Aberdeen, which appeared in the Reports.

THE IRISH NATURALIST.

1899. p. 199, Irish Rubi; p. 198, Notes on the Flora of the Counties of Armagh, Down, Antrim and Derry.
1907. p. 146, Notes on a Botanical Expedition to Ireland in September 1906.
1909. p. 209, Notes on Irish Plants.
1911. p. 117, The British Utriculariae.
1912. p. 235, Notes on Irish Plants.

ANNALS OF BOTANY.

1896. Vol. x., No. xl., December, p. 621, The Occurrence of a hybrid Gentian in Britain; p. 622, The hybrids of *Linaria vulgaris* and *L. repens* in Britain.

JOURNAL OF THE LINNEAN SOCIETY.

A new variety of Cow-wheat, *Melampyrum pratense*, var. *hians* (Read June 5, 1884).
On a New Species of Grass, *Bromus interruptus*, in Britain (Read December 5, 1895), vol. xxxii.
On the Occurrence of *Carex helvola* Blytt in Britain (Read March 3, 1898), vol. xxxiii.
On the British Species of Sea-Thrifts and Sea-Lavenders (Read December 6, 1900), vol. xxxv.
On *Poa laxa* and *Poa stricta* of our British Floras, vol. xxxv.

ASHMOLEAN NATURAL HISTORY SOCIETY OF OXFORDSHIRE.

The inauguration of the Society was effected in 1880, when Dr Druce played a leading part in its foundation. He was Secretary from its inception (1880) till 1887, and Treasurer from 1880 to 1932 except for the years 1887 (part) to 1889. He has been President four times, 1895-1897, 1905-1906, 1915-1916, 1928-1929, the last Centenary year of the Ashmolean Natural History Society. Besides giving numerous Lantern Lectures to the Society, he gave annually a Christmas Lecture for Children from 1900 to 1930, only missing 1912, when, owing to indisposition, he had a deputy to deliver his Lecture for him.

Accounts of the Ruskin Reserve at Cothill, p. 21 (1902), p. 20 (1908), p. 19 (1916); *Ulmus Plotii* Druce, p. 33, 1911 (and plate); *Orchis praetermissa*, p. 30, 1914 (and plate); Ewelme Plants, 1796-9, p. 23, 1917; Additions to the Berkshire Flora, p. 21, 1918; Mosses and Liverworts of Oxfordshire, p. 25, 1921; Obituary Notices of W. Baxter, p. 22, 1903; H. E. F. Garnsey, p. 26, 1903; F. T. Richards, p. 16, 1905; H. Willett, p. 16, 1906; W. Osler, p. 23, 1919; A. M. Bell, p. 20, 1920.

Besides the above papers he wrote the yearly Sectional Report of Field Botany, of which Section he was President since the foundation of the Society.

THE BOTANICAL EXCHANGE CLUB OF THE BRITISH ISLES.

First contributed plants for Exchange in 1878 when he sent *Rosa tomentella* from Gayton and Rothershope, Northants. In 1879, he sent *Lepidium Smithii*, a form with yellow anthers, from Kingsthorpe, Northants; *Carex vulpina*, b. *nemorosa* Rebentisch, from Fotheringay, Northants. From 1880 onwards he was a regular contributor to the Exchange Club (excepting the year 1886) as well as making many N.C.Rs. which are published in the Reports.

He was the Distributor for 1888, 1892 (being the largest single contributor of specimens, sending 759), 1897, and 1903, and Secretary of the Club, 1902, on the resignation of Mr C. Bailey. From 1902, besides being the Secretary and Treasurer of the Club, and compiling the Plant Notes, Book and Obituary Notices, etc., he was often the largest contributor of specimens for Exchange (e.g., 1911, 1912, 1916, 1923).

1913. pp. 405-440, Notes on Nomenclature.

1914. pp. 88-108, Supplement to Botanical Society Report for 1914: Part I., Erophila; Part II., *Orchis maculata* and *O. Fuchsii*.

1916. pp. 523-550, Supplement to Report of Bot. Soc. and Exchange Club for 1916: John Goodyer, of Mapledurham, Hampshire, 1592-1664; pp. 601-653, Nomenclatorial Notes, chiefly African and Australian.

1917. pp. 149-189, Notes on the British Orchids, chiefly the Palmate Section.

1918. pp. 443-480, Supplement: Additions to the Berkshire Flora.

1919. pp. 731-799, Supplement: The Extinct and Dubious Plants of Britain.

1920. pp. 179-190, Supplement: *Bursa pastoris* Weber, studies by E. Almquist, introduction by G. C. Druce (pp. 11).

1921. pp. 309-316, *Orchis latifolia*, *praetermissa*, *maculata*, *purpurella*; pp. 457-546, Flora Zetlandica.

1922. pp. 625-8, *Orchis latifolia*; pp. 756-66, Herbaria; pp. 786-796, Botanising in Norway; pp. 809-813, The History of the Botanical Society and Exchange Club of the British Isles.

1923. pp. 322-328, *Orchis maculata* and *O. Fuchsii* Druce; pp. 335-366 and 5 plates, Supplement: The Foundation of the Oxford Botanic Garden and its Tercentenary.

1924. pp. 628-657, Additions to the Flora Zetlandica; pp. 661-666, Canon John Vaughan and his Herbarium; pp. 691-694, Mrs Delany and Bucks Plants, Nomenclatorial Note.

1925. pp. 919-924, A Note on Nomenclature; p. 933, Presentation to the Honorary Secretary (G. C. Druce); pp. 949-957, Huntingdonshire Plants; pp. 966-977, Egypt and Palestine; pp. 978-983, Norway and Sweden.

1926. pp. 145-152, Le Lautaret; pp. 169-174. Note on Nomenclature.

1927. pp. 463-493, British Plants contained in the Du Bois Herbarium at Oxford, 1690-1723; pp. 539-548, A Visit to the Canaries.

1928. p. 851, British Brambles by C. G. Trower (edited by G. C. Druce); pp. 867-883, "British Plant List," Notes on the Second Edition, and Additions and Corrections. Supplement: The Flora of West Ross, pp. xxxvii. + 112 (1929).

1929. pp. 177-198, The British Erophila.

1930. p. 437, *Magnolia grandiflora*; pp. 469-471, Plants new to the Cyprus Flora; p. 479, Dr Druce's Eightieth Birthday.

MISCELLANEOUS.

The Botany for the Victoria County History of Berkshire, pp. 47; Buckinghamshire, pp. 40; Bedfordshire (with others), pp. 32; Northamptonshire, pp. 38; Huntingdonshire, pp. 50; Oxfordshire, pp. 30; The Genus *Cerastium* for Moss's Cambridge Brit. Flora, iii. (1920), pp. 43-56; The Genus *Montia* for Moss's Cambridge Brit. Flora, iii. (1920), pp. 3-6.

Helleborine Hill or *Epipactis* Adans.? Bulletin of the Torrey Botanical Club, xxxvi., p. 543, 1909.

What is *Convallaria odorata* Mill.? *l.c.*, xxxvi., p. 409, 1909.

Linnaeus' "Flora Anglica." Scottish Botanical Review, p. 154, July 1912.

The International Phytogeographical Excursion in the British Isles. Additional Floristic Notes, by G. C. Druce. New Phytologist, vol. xi., No. 9, November 1912.

Artemisia Stelleriana Bess. in Scotland (comm. by Dr R. S. MacDougall). Trans. and Proc. Bot. Soc. Edin., April 1900.

Notes on Scottish Plants, *l.c.*, vol. xxvi., part ii., p. 147.

Some Gloucestershire Plants. Proc. Cotteswold Nat. Field Club, vol. xiv., part ii., January 1903.

Notes on the Botany of Otmoor. Trans. and Papers of Oxf. Archaeol. Soc., No. xl., 1900.

Address on the Unveiling of the Monument to George Don at Forfar, September 8, 1910, ptd. by Parker & Co., Oxford, 1910.

President's Address, British Pharmaceutical Conference, Dublin, and Dundee, 1902.

TRAVEL.

North African Experiences," being Notes of a Tour in the Spring of 1900. Reprinted from Chemist and Druggist, pp. 38 (1900).

"A Pharmacist Abroad"—Athens, Smyrna and Constantinople. Reprinted from the Pharmaceutical Journ., February 24, 1906, pp. 14 (illust.).

"A Pharmacist in Constantinople." Reprinted from do., May 19, 1906, pp. 12 (illust.).

"A Pharmacist Abroad," Wanderings in Greece and Turkey. Reprinted from do., December 2, 1905, pp. 8.

"Southern and Eastern Sketches"—Sicily, etc. Reprinted from do., August 1 and November 26, 1903 (illust.), pp. 22.

—— do., February 27, 1904 (illust.), pp. 16.

—— Syracuse, do., May 21, 1904 (illust.), pp. 27.

—— Corfu and Greece, do., January 7, 1905 (illust.), pp. 20.

Madeira and the Azores. Reprinted from Chemist and Druggist (1890) (illust.), pp. 16.

CORRECTIONS.

In "Report Bot. Exch. Club," 1928, vol. viii., part v. (August 1929).
P. 665, line 2 from top of page, *for* "in Trans." *read* "communicated to the."

In "Report Bot. Exch. Club," 1928, vol. viii., part vi. (August 1929).
P. 913, line 1 from bottom of page, *for* "Lorns" *read* "Loons."

In "Report Bot. Exch. Club," 1929, vol. ix., part i. (August 1930).
P. 9, column 1, line 4 from top of page, *for* "Edmondstone" *read* "Edmondston."
P. 24, line 2 from top of page, for "4286" read "4280."
P. 118, line 5 from top of page, *for* "Carrston" *read* "Cairston."
P. 119, line 4 from top of page, and page 129, line 25 from top of page, *for* "Runcat" *read* "Runcie."
P. 127, line 21 from top of page, *for* "[B.905]" *read* "[3905]."
P. 129, line 17 from bottom of page, *for* "Northdale" *read* "the Burn of Aith;" and, in line 16 from bottom of page, *for* "the same place" *read* "Northdale."
P. 135, line 4 from top of page, *for* "[394]" *read* "[3911]."
P. 137, line 2 from top of page, *for* "Redland" *read* "Rendall;" and, in line 7 from top of page, *for* "Dullant" *read* "Dullans."
P. 137, lines 7 and 8 from top of page—"× PHYLICIFOLIA = LUDIFICANS F.B.W. Burn of Dullans, Fetlar, Zetland, a planted shrub, Johnston."

NOTE.—This hybrid is shown under 650/9 SALIX AURITA L., instead of under 650/8 SALIX CAPREA L., as determined by Mr J. Fraser, namely, "SALIX CAPREA × PHYLICIFOLIA."

P. 137, line 15 from top of page, *for* "Bank" *read* "Burn."
P. 140, line 14 from bottom of page, *for* "Ferber" *read* "Fieber;" and, in line 8 from bottom of page, *for* "Une" *read* "Urie."
P. 143, line 12 from bottom of page, *for* "Den of Dunkadale" *read* "Dee of Durkadale."

At the following places, *for* "Johnston in Trans. Bot. Soc. Edin., 1928," and "1929" *read* Johnston in his "Additions to the Flora of Orkney" (1929):—

P. 24, lines 5 and 29 from top of page.
P. 25, lines 5 and 15 from top of page.
P. 26, lines 1 and 4 from top of page.
P. 107, line 10 from bottom of page.
P. 108, line 16 from bottom of page.
P. 115, line 19 from bottom of page.
P. 118, line 6 from top of page.
P. 121, line 20 from top of page.

P. 126, line 12 from bottom of page.
P. 136, lines 21, 10 and 1 from bottom of page.
P. 137, line 2 from top of page.
P. 144, line 1 from top of page.

On page 25, line 23 from top of page, and page 26, line 16 from bottom of page, *add* See H. H. Johnston's " Additions to the Flora of Orkney " (1929).

At the following places, *for* " Johnston in Trans. Bot. Soc. Edin." *read* Johnston in his " Additions to the Flora of Shetland " (1929)—
P. 102, line 9 from bottom of page.
P. 106, line 8 from bottom of page.
P. 144, line 1 from bottom of page.

On page 32, line 5 from bottom of page, and on page 142, line 14 from bottom of page, *add* See H. H. Johnston's " Additions to the Flora of Shetland " (1929).

NOTE.—Colonel H. H. Johnston's Eleventh (1928), Twelfth (1929), Thirteenth (1929), Fourteenth (1931), and Fifteenth (1932) Papers on " Additions to the Flora of Orkney, and his Second (1928), Third (1929), and Fourth (1929) Papers on " Additions to the Flora of Shetland " were not published in the " Transactions of the Botanical Society of Edinburgh." They were printed privately for him by Messrs Neill & Co., Ltd., Edinburgh.

In " Report Bot. Exch. Club," 1930, vol. ix., part iii. (August 1931).
P. 363, line 5 from bottom of page, *after* " Orkney " *add* [4065]; and, in line 4 from bottom of page, *for* "[1458]" *read* "[346]."

REPRINTS,

ETC.,

ALL THE CHIEF PAPERS PRINTED IN REPORTS TO BE OBTAINED FROM THE ASSISTANT SECRETARY, J. CHAPPLE, 9 CRICK ROAD, OXFORD.

Botanical Society and Exchange Club Reports, 1879-1928 (complete),	£12	12	0
Mosses and Hepatics of Oxfordshire,	0	2	6
Dubious Plants of Britain,	0	2	6
Centaurium Scilloides and Ajuga genevensis,	0	2	0
Alchemilla argentea,	0	1	6
The Genus Bursa. Almquist & Druce,	0	2	6
Plantago maritima, &c.,	0	1	6
European Sphagnaceae. Braithwaite,	0	8	6
Sketches of Botany, 1790. Pulteney. 2 vols.,	0	18	0
Corrected Names of Roses. Wolley-Dod,	0	1	6
Menthae Briquetianae. J. Fraser,	0	1	6
The Genus Thymus. K. Ronniger,	0	2	0
Orchis maculata L., &c. Druce,	0	1	6
Centaurea Scabiosa. C. E. Britton,	0	1	0
Centaurea Jacea. C. E. Britton,	0	1	0
Notes on Nomenclature. Druce, 1914,	0	2	6
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REPORT FOR 1931

OF THE

BOTANICAL EXCHANGE CLUB

(CONVENIENTLY ABBREVIATED REP. B.E.C.)

BY THE

EDITOR AND DISTRIBUTOR,

P. M. HALL.

BRIT. MUS.

VOL. IX. PART VI.

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September 1932.

REPORT OF THE DISTRIBUTOR FOR 1931.

Once more the Distributor has to record a falling-off in the total number of plants contributed. Although there is still submitted a considerable quantity of material of little interest, it would appear that on the whole there is this year a higher proportion of plants of critical interest.

The observation made by Mr Britton last year, as to the inadequate return made to the senders of the most important parcels, carries even more force this year when the total available for distribution is reduced. The sending of very small gatherings, in some cases only four or six sheets, adds very considerably to the Distributor's difficulties. Such a small number of sheets is entirely absorbed by referees and institutions and leaves no available surplus for what may be termed "private" members.

I should like to take this opportunity of thanking members for all the trouble and care they have taken to lighten the Distributor's task, but would ask the few who do not observe the Rules fully if they will do so for the benefit of future Distributors, especially with regard to enclosing the labels of each gathering in an envelope. This small detail saves a vast amount of labour.

The thanks of the Club are due to all those members who contributed notes and especially to the referees, who supplied most valuable criticisms, viz.:—Dr E. Drabble, Lt.-Col. A. H. Wolley-Dod, Messrs W. H. Pearsall, A. E. Wade, C. E. Britton, J. E. Little, W. O. Howarth, W. Watson, A. Bruce Jackson, J. Fraser, and C. E. Hubbard.

Although this report deals with the season of 1931, it would not be right, I think, to make no allusion here to the death of Doctor Druce. Reference to the table of Contributors will show to what extent again the Club is indebted to the energy of our lamented Secretary. He contributed over one-fifth of the total number of sheets submitted this year. An itinerary reconstructed from the labels of his plants collected in a year when his health was failing testifies to his amazing and indomitable determination to carry on. The parcels were sent out about three weeks before his death, but although he was able to look through the plants he was, unfortunately, not able to write many notes except on his own gatherings. It was his hope, expressed to me shortly before his death, that new recruits would be forthcoming for the Exchange Distribution and that 1932 would witness a revival of this side of the Club's activities.

Patrick M. Hall.

12 High Street,
Fareham, Hants,
March 5, 1932.

LIST OF PARCELS RECEIVED.

	No. of Gatherings.	No. of Sheets (and packets of seeds).
Professor F. S. Beattie	14	138
S. H. Bickham	3	50
W. Biddiscombe	7	64
C. E. Britton	11	134
G. C. Brown	12	134
R. Bulley	11	84
Rev. R. J. Burdon	6	113
The late Dr G. Claridge Druce ...	39	579
A. H. Evans	1	11
H. Foster	12	132
J. Fraser	5	100
L. Beeching Hall	1	6
J. E. Little	20	238
J. W. Long	7	90
J. E. Lousley	21	243
F. Rilstone	2	16
Miss I. M. Roper	5	77
R. L. Smith	4	69
Dr W. A. Sledge	10	117
F. A. Sowter	5	43
National Museum of Wales	5	55
C. Waterfall	18	202
W. Watson	1	6
I. A. Williams	3	26
A. Wilson	3	77
Lt.-Col. A. H. Wolley-Dod	5	41
Total	231	2845
P. M. Hall—Illustrated Paper on Hybrid Orchids		40 copies
		2885

Thalictrum. Origin, gravel soil near Llangorse, Brecon, v.-c. 42. Cult., Ledbury, September 5, 1931.—S. H. Bickham. "Seems to be *T. flavum* L., var. *nigricans* (Jacq.), with an interrupted panicle and erect-patent branches; but the carpels are too young to show their shape at maturity."—Fraser.

Thalictrum arenarium Butch. [*T. dunense* auct. angl.]. Sandhills between Saltburn and Redcar, North Yorks, v.-c. 62, July 18, 1931.—W. A. Sledge. "One of my specimens has rather large, shallowly incised leaflets, and the other has smaller deeply incised leaflets. I have both forms on the same stem of my gathering on the sand dunes of N. Aberdeen, and the fruits gathered on September 14 are fully developed. I fully agree with Dr Sledge's determination."—Fraser. "An earlier name is *T. marinum* Druce in *Hayward's Botanist's Pocket Book*, Ed. 19."—Druce.

Ranunculus acris L., var. North Barningham, Norfolk, July 12, 1931 —R. J. Burdon. "*R. acer* L., var. *multifidus* DC. (*R. Boraeanus* Jord.)."—Drabble. "Is *R. acris* (or *R. acer* L.), var. *multifidus* DC. According to the plate 15, 68.2° in Gaston Bonnier's *Flore Complète Illustrée en Couleurs de France, Suisse et Belgique*, this has the most deeply divided leaves and the narrowest segments."—Fraser.

Ranunculus Flammula L., var. *tenuifolius* Wallr. Woking, Surrey, July 1931.—W. Biddiscombe. "This is intermediate between the common narrow-leaved form of *Flammula* (*i.e.*, var. *suberectus* Syme) and var. *tenuifolius* Wallr. It approaches *tenuifolius* in its rooting nodes, but is unusually large for that variety. I cannot make *tenuifolius* Wallr. and *angustifolius* Wallr. synonymous, as in the "List."—Drabble.

Ranunculus parviflorus L. Slapton Sands, S. Devon, July 15, 1931. —G. C. Druce.

Ranunculus fluitans L. River Wey, Pyrford, Surrey, July 1931.—W. Biddiscombe. "Yes, *R. fluitans* is found in the River Wey at several places. These plants are rather too young, and therefore show very few of the characteristic fruits of this species. All Mr Biddiscombe's sheets are most carefully displayed."—Pearsall.

Ranunculus heterophyllus Weber. Basingstoke Canal, Woking, Surrey, July 3, 1931.—W. Biddiscombe. "Correctly named; with flowers much larger than in the River Bourne plants. The plants are very young and possess few fruits, but these have numerous strong bristles as is often the case with this variable species."—Pearsall.

Ranunculus pseudo-fluitans Baker & Foggitt. The Bourne, Ottershaw, Surrey, July 14, 1931.—W. Biddiscombe. "A rather unusual form of *R. heterophyllus* Weber, possessing flowers much smaller than usual and floating leaves with a relatively small entire or sub-entire central lobe. *R. pseudo-fluitans* is a much larger and more robust plant."—PEARSALL.

Ranunculus sphaerospermus Boiss. & Bl. Ewelme, Oxon, July 23, 1931. Growing in clear, shallow, swiftly-running water, the leaves are less condensed than usual.—G. C. DRUCE. "A very valuable gathering of this rare species. These sheets are models of careful presentation, every part of the plant being admirably shown."—PEARSALL.

Papaver umbrosum Hort. Dashwood Hill, Bucks, July 1931. See Secretary's Report, p. 552. New as an adventive to Britain.—G. C. DRUCE. "The *Index Kewensis* refers this to *P. Rhoeas*, of which it is a very highly-coloured variety, known since 1876."—FRASER. "Yes; this is *P. umbrosum* of gardeners' catalogues. I have grown it for many years. It is clearly very closely related to *P. Rhoeas* and seems to hybridise freely with the Shirley Poppy."—DRABBLE.

Capnoides claviculata Druce. Edge of footpath by edge of wood near Broxton, Cheshire, July 24, 1931.—C. WATERFALL.

Fumaria Bastardii Bor., var. *Gussonei* Pugsl. Malpas Road, Truro, W. Cornwall, v.-c. 1, May 11, 1931.—Miss I. M. ROPER.

Fumaria Vaillantii Lois. Gangsdown Hill, Oxon, June 1931.—G. C. DRUCE. "Yes."—DRABBLE.

Barbarea arcuata (Presl) Reichb. Dashwood Hill, Bucks, June 12, 1931.—G. C. DRUCE.

Erophila Boerhavii (Van Hall) Dum., var. *muricola* (Jord.) Schulz, teste Schulz. [X.07]. Churn, Berks, 1930.—G. C. DRUCE.

Cochlearia anglica L. Steep hedge-bank near the Old Pier, Weston-super-Mare, N. Somerset, June 1, 1931.—C. WATERFALL. "Radical leaves distinctly cordate. Not *anglica* but *C. officinalis* L. from a locality given in White's *Flora of Bristol*. I gathered the plant there myself in August 1923."—LOUSLEY. "I agree in naming this plant *officinalis* L."—HALL.

Sisymbrium Irio L. Waste ground in field. Uphill, near Weston-super-Mare, N. Somerset, May 20, 1931.—C. WATERFALL. "Rather this is *S. officinale* Scop. All Crucifers are best gathered when in fruit."—FRASER. "The specimen I received is very young—in earliest bud. It is certainly not *Irio* but immature *S. officinale* (L.) Scop."—LOUSLEY.

Erucastrum Pollichii Schimp. [B.21]. Disused gravel-pit, Tamworth Lane, near Mitcham Common, Surrey, August 23, 1930.—J. E. LOUSLEY. "Correct for this plant of many names. The bracts subtending the siliquas are very peculiar and uncommon in the Cruciferae."—**Fraser.**

Diplotaxis muralis (L.) DC., var. *Babingtonii* (Syme). Llandudno, Carnarvon, July 4, 1931. I found this in many places in the outskirts of Llandudno, but always growing near new houses or houses in the course of erection. One root I saw gave off nearly 20 shoots. I did not find the type growing with it anywhere.—H. **Foster.** "Yes; the branching, leafy-stemmed variety."—**Fraser.**

Thlaspi alpestre L., var. *occitanicum* (Jord.). Carperby, near Leyburn, North Yorks, v.-c. 62, May 25, 1931.—W. A. **Sledge.** "This is not Jordan's *Th. occitanicum* Obs. 3, t. 1 bis A; it more closely resembles *Th. Gaudinianum* Jord. Obs. 3, t. 1 bis B, but does not entirely agree with either plant."—**Drabble.** "Beautiful examples of a very difficult plant. Dr Sledge's plants certainly have the style longer than the notch, and agree with what has passed for *occitanicum* Jord., but as has been shown by Dr Drabble (*Watson B.E.C. Rep.*, iv., 15, 1929-30) and Mr White (*Fl. Bristol*, 158) this name is in grave doubt. The present gathering seems to agree with plants from Teesdale, but to differ from Carnarvonshire and Mendip gatherings in the close rosette habit, and broad rosette leaves."—**Lousley.**

Iberis amara L. Bix Bottom, Oxon, July 26, 1931.—G. C. **Druce.** "The true thing, but very tiny specimens."—**Fraser.**

Reseda lutea L. Banks of Trent Pool, Derbyshire, July 31, 1931.—R. **Bulley.**

Helianthemum Chamaecistus Mill. [3780]. Banstead Downs, Surrey, June 14, 1931. A form notable for the petals being much narrower than usual—obovate, not roundish—and, consequently, not overlapping. At first, I suspected that this plant was probably the *H. surrejanum* of the older botanists, but inspection of the plate (t. 2207) in *English Botany* showed that there was no resemblance between the plant distributed and the representation of *H. surrejanum*, which has all the appearance of being an abnormality. Dr Druce has described in the *Flora of Oxfordshire* a sub-var. *parviflorum* of *H. Chamaecistus*, with the characters "flowers consistently half-size of type," which does not seem to be the same as the Banstead Downs plant.—C. E. **Britton.** "Since the preceding note was written, Salmon's *Flora of Surrey* has appeared, in which the lamented author very successfully showed that two diverse plants have been included under *Cistus surrejanus*—(1) the plant figured in *Eng. Bot.*, t. 2207, and (2) the plant to which the name was originally applied. I have taken the opportunity of inspecting the figure in Sweet's *Cistineae* and find no resemblance to my Banstead Downs plant. The flowers depicted by Sweet are remarkable not only for the narrow petals, but for their *stunted* condition, and they are bifid or trifid at the apex, distant, and so expose the also narrow sepals."

—**Britton.** "Comes into the same category as *H. surrejanum* Mill. Two pieces with the narrowest petals are not far off that plant. These plants with reduced petals are fairly frequent on the chalk downs of Surrey."—**Fraser.**

Viola lactea Sm. Cranmore, Isle of Wight, May 1931.—**J. W. Long.** "It is impossible to separate most of these plants from *lactea* although they have rather a different appearance to the *lactea* of the New Forest, Dorset and Cornwall heaths. Many of them have exceptionally wide leaves and I suspect that the plants may be shade-grown and drawn up among grass. Some plants showed considerable traces of colour in the flowers. One from its stipules was, I think, undoubtedly *canina* × *lactea*; two others may be the same hybrid, but on account of their leaves being distinctly cordate there may be *Riviniana* influence as well. I am glad to see that *lactea* is still found in the Isle of Wight. According to Townsend and Rayner's Supplement, it had ceased to exist."—**Hall.** "A few of these may be *lactea* × *canina*, but I think most of them are true *lactea*. I know the plant well in this station; in the living condition the difference from *canina* in colour of flower and texture and form of leaf is very well marked."—**Drabble.** "Correctly named."—**Fraser.**

Viola hirta L., var. *Foudrasii* Jord. Thrumpton Hills, Notts, April 18, 1931.—**R. Bulley.** "One or two of these specimens approach *Foudrasii*, but taking the gathering as a whole the plants are too pubescent and too large-flowered for that variety. I should prefer to call it var. *propera* (Jord.) Gillot."—**Hall.** "I do not think my specimens are *Foudrasii*; they come under var. *propera* (Gillot), which seems to be merely a small growth-form of *hirta*."—**Drabble.**

Viola contempta Jord. [902]. Highover, Hitchin, Herts, September, October, and November 1930. The petals are tipped or tinged with purple, but the plants grew inter-mixed with others having pale flowers. It may be noted that while in 1930 many plants developed purple coloration of similar character, in the autumn of 1931 none such were found.—**J. E. Little.** "Most of these specimens—those with pale flowers and narrower leaves—are good *V. contempta* Jord.; some have broader leaves and more colour in the flowers than usual."—**Drabble.**

Viola contempta Jord., var. *patula* Drabble. [923]. Highover, Hitchin, Herts, September, October, and November 1930.—**J. E. Little.** "Yes, this must be called *contempta*, though it is far from being typical; the leaves and sepals are unusually broad, and the whole plant rather fleshy. As it is spreading from the base it comes under var. *patula*; Jordon's description does not cover such plants."—**Drabble.**

Viola Lejeunei Jord. Rysa, Hoy, Orkney, August 1931. This grows in myriads among oats in Hoy and is the annual plant. I think it becomes of longer duration in adjacent grass land.—**G. C. Druce.** "Yes;

the annual *tricolor* plants are *V. Lejeunei* Jord. though like many pansies of N. Scotland they are very large-flowered."—DRABBLE.

Viola agrestis Jord. [898]. Near Nine Springs, Great Wymondley, Herts, November 11, 1930.—J. E. LITTLE. "Most of these plants are typical *agrestis*; a few are unusually large-flowered and broad-leaved."—DRABBLE.

Viola agrestis Jord. [928]. Great Wymondley, Herts, October 1930. Two upper petals barred with purple.—J. E. LITTLE. "Yes, *V. agrestis* Jord., though I suspect some hybridity in the few specimens with larger and more strongly purple-barred flowers."—DRABBLE.

Viola agrestis Jord. [2475]. "Grimes Dyke," Stanway, N. Essex, v.-c. 19, September 12, 1931.—G. C. BROWN. "Yes, one of the many forms or states of *agrestis*."—DRABBLE.

Viola segetalis Jord.? [2476]. Allotment ground, Lexden, N. Essex, v.-c. 19, September 20, 1931. Apparently *segetalis* although a few of the stipules have the centre lobes toothed.—G. C. BROWN. "Yes, *segetalis*."—DRABBLE.

Viola ——. Limestone quarry bank, Ketton, Rutland, September 1931.—F. A. SOWTER. "*V. segetalis* Jord."—DRABBLE.

Viola ruralis Bor. [935]. Lucerne field, Wymondley Road, Hitchin, Herts, April 15, 1931.—J. E. LITTLE. "Yes, excellent *ruralis*."—DRABBLE.

Viola arvatica Jord. [901]. Great Wymondley, Herts, September 6, 1930.—J. E. LITTLE. "Yes, *V. arvatica* Jord. Most of the plants are very good typical examples, with their slender, widely divaricate peduncles; the larger ones are unusually robust, but, I think, unmistakable."—DRABBLE.

Dianthus deltoides L. Near Llandudno, Carnarvon, July 18, 1931.—H. FOSTER.

Silene maritima With. Bank by Bristol Channel, Sand bay, near Weston-super-Mare, N. Somerset, May 25, 1931.—C. WATERFALL.

Silene Cucubalus Wibel, var. *pubescens* DC. Clipsham, Rutland, June 1931.—F. A. SOWTER.

Silene italica Pers. [C.5]. Galley Hill, Greenhithe, West Kent, June 4, 1931. Although doubtless introduced at a distant date this plant has been known for a considerable time in this district, and in several distinct localities. Foreign specimens in my Herbarium are much more floriferous.—J. E. LOUSLEY. "The clavate calyx and long carpophore are good evidence of this plant."—FRASER.

Stellaria nemorum L. Wharfe banks, Collingham, Mid-west Yorks, v.-c. 64, May 16, 1931.—W. A. Sledge.

Arenaria Peploides L. Hornsea sands, E. Yorks, June 10, 1931.—R. Bulley.

Arenaria Peploides L. Shingle bank of Bristol Channel, Sand bay, near Weston-super-Mare. N. Somerset, June 3, 1931.—C. Waterfall.

Geranium sanguineum L., var. *decumbens* Dr. West shore, Llandudno, Carnarvon, July 11, 1931.—H. Foster. "The only var. *decumbens* I can trace is var. *decumbens* Druce (*prostratum* Syme non Cav.) which, from the synonomy has 'Stems decumbent, copiously hairy, leaves with the segments divided two-thirds or three-quarters down towards the base; ultimate lobes with curved sides.' The small specimen received is insufficient to show the habit, but it looks as though it may have been decumbent, the stem is clothed with longer white hairs than usual, and the leaves agree with Syme's description. Mr Foster's plant has a single large flower, whereas var. *prostratum* DC. (with which var. *prostratum* of Cavanilles and Persoon are probably synonymous) has 'Flores minores.' Possibly the present gathering may fall under var. *decumbens* Druce, but a further supply of more complete specimens would be very acceptable."—Lousley. "Yes, if really prostrate, but less hairy and less compact than the Cornish and Cheshire plants."—Drabble.

Geranium sylvaticum L. Bishopdale, N. Yorks, June 13, 1931.—H. Foster.

Genista tinctoria L., sub-sp. *elatior* Koch (teste Kew). [C.33]. Alien. Roadside, Orpington, West Kent, July 12, 1930.—J. E. Lousley. "A showy, cultivated shrub, which has got fourteen specific synonyms in gardens."—Fraser.

Ononis repens L. Sand dune near Ainsdale, S. Lancs. July 7, 1931. —C. Waterfall.

Medicago sylvestris Fr. [C.3] Ascending plants, on disused gateway near Mildenhall, West Suffolk, July 11, 1931. I was unable to find more than two fruiting specimens, which, judging from their infrequency in the large Herbarium of the S. London Bot. Inst., must be rare. These examples show the angular stems, and dark coloured markings on the flowers—especially on the buds. The leaves are variable.—J. E. Lousley. "I would call this *M. falcata* L., which I have from the banks of the Thames and North Berwick. The pods are falcate, but very few are produced. *M. sylvestris* Fr. should have flowers that are first yellow then change to lurid violet and green. The pods are annular."—Fraser. "In the absence of fruit I should call this *sylvestris* —no doubt Mr Lousley has satisfied himself that the fruit-characteristics are right."—Drabble.

Medicago hispida Gaertn. (aggr.). [761]. Wool Alien. Great Wymondley, Herts, September and October 1928. See *Rep. B.E.C.*, 1928, p. 901, and *Watson B.E.C. Rep.*, 1928, p. 471.—J. E. LITTLE. "Yes, *Medicago hispida* Gaertn. (*M. denticulata* Willd.; *M. hispida* Gaertn., sub-sp. *M. polymorpha* Willd., δ *denticulata* G. & G. of Rouy), *i.e.*, the most general form in this country."—DRABBLE. "Agrees with the description, the only exception being that some of the seeds are oblong instead of being all reniform. The specific name is not very apt for a nearly glabrous plant."—FRASER.

Melilotus altissima Thuill., var. *unguiculata* (Ser.) ? Norton Spit, Isle of Wight, August 1928.—J. W. LONG. "Yes, excellent material of var. *unguiculata*. I think it should be regarded as a *lusus*, not as a named *variety*."—DRABBLE.

Melilotus alba Desr. Banks of Trent Pool, Derbyshire, July 31, 1931.—R. BULLEY.

Melilotus arvensis Wallr. With unguiculate fruits. Waste land, Newport, Isle of Wight, August 1930.—J. W. LONG. "A very interesting unguiculate lusus of *M. arvensis* Wallr., hitherto undescribed so far as I know."—DRABBLE. "This is new to the List."—DRUCE.

Trifolium subterraneum L. Mountsorrel, Leicestershire, July 1931. —F. A. SOWTER. "Correct. The seed pods of this species bury themselves in the soil and the seeds do not germinate for years, but if the soil is broken up they will germinate the same season."—FRASER.

Trifolium filiforme L. Grassy ground by sand-hills, Borth, Cardiganshire, v.-c. 46, June 28, 1931.—A. WILSON. "Yes; readily identified by 1-4 flowers in a cluster, and reflexed fruit-stalks."—FRASER.

Trifolium resupinatum L., var. *suaveolens*. Grain alien. Splott, Cardiff, September 1931. All these specimens were gathered from one large straggling plant. The flowers were very sweet-scented.—R. L. SMITH. "I believe this variety is correct. The individual flowers should measure 7-8 mm. in length, and I have measured some of them 7.5 mm., but they always contract in drying. I should have liked a head in fruit to get the measurement. The species can easily be recognised by the corolla being upside down, and the flowers of the type are smaller than in the variety."—FRASER.

Vicia sepium L. Hedge-bank near Hoole bank, Cheshire, June 25, 1931.—C. WATERFALL.

Vicia angustifolia L., var. *Bobartii* (Forst.). Grassy bank, near Sand bay, near Weston-super-Mare, N. Somerset, June 3, 1931.—C. WATERFALL. "Not the var. *Bobartii*, which has very much narrower and less numerous leaflets, but *V. angustifolia* L."—LOUSLEY. "I agree that this is not *Bobartii*."—HALL.

Spiraea Filipendula L. Great Orme's Head, Carnarvon, July 7, 1931.—H. Foster.

Rubus ——. Crowthorne, Berks, 1931. Might well be one of the *sylvatici*; but the prickles are unusually long and strong. It forms fairly large compact bushes and puts out a few long shoots rather late in the year. These even when lying on loose garden soil show no tendency to root at the tips. Leaves rather dark green, flowers red-lilac, stamens pink.—A. H. Evans. "*Rubus villicaulis*, sub-sp. *insularis* (Aresch.) Sudre. Distinct from *R. villicaulis* Koehl., although combined with it by Focke, who has been followed in the *Handbook* and the *London Catalogue*. Areschoug, *Some Observations on the Genus Rubus*, I., pp. 139-141, may be consulted."—Watson.

Rubus ulmifolius Schott (*R. rusticanus* Merc.). [2470]. West Bergholt Heath, N. Essex, v.-c. 19, July 19, 1931. Typical, and though common everywhere, has not, I think, been sent before from v.-c. 19.—G. C. Brown. "Yes."—Watson.

Rubus apiculatus W. & N., var. *raduloides* Rogers. [2108]. Lane by High Woods, Colchester, N. Essex, v.-c. 19, July 21, 1931. Petals pink, stamens slightly exceeding styles, sepals reflexed then patent. Stem dark purple, prickles yellow-pointed. From the bushes on which Rev. H. J. Riddelsdell commented in 1923, "This is good *raduloides*, leaves rather small; N.C.R. for v.-c. 19."—G. C. Brown. "*R. apiculatus*, sub-sp. *raduloides* (Rogers)."—Watson.

Rubus Radula Weihe. [2469]. Fordham Heath, N. Essex, v.-c. 19, July 19, 1931. Petals slightly tinged with pink, sepals patent, stamens white, much exceeding styles, stem dark purple. Hardly typical in its almost white flowers and forming rather low bushes but otherwise like my Berechurch specimens.—G. C. Brown. "Yes, but quite typical. Weihe and Nees have 'petala alba' and 'petala albida' for *R. radula*, and value the character as distinguishing this species from *R. rudis*, which has 'petala rubiennda' or 'petala pallide purpurea.' It is our more usual pink-flowered form of *R. radula*, therefore, which is untypical. Last autumn I sowed seed of a white-flowered *R. radula* from Bailey Gate, Dorset, to test whether the colour of the flower is independent of the soil. I have a pink-flowered *R. radula* in my garden, on sand. It came from off a chalky clay, and the colour of the flowers has not changed."—Watson.

Rubus rufescens L. & M. (*R. rosaceus*, var. *infecundus* Rogers). [2471]. Lane by High Woods, Colchester, N. Essex, v.-c. 19, July 21, 1931. Petals pink, sepals at first reflexed then rising and clasping, stamens exceeding styles.—G. C. Brown. "Yes."—Watson.

Rubus scanicus Areschoug. Netley Heath, Surrey, in abundance under bracken on gravel at about 650 ft. o.d., July 14, 1928, and August 9, 1928. Stem low-arching, rooting. Flowers small, opening flat, with the sides of petals at length revolute. Petals suborbicular, clawed, rose-pink. Stamens pink-based, at first half as long as the green styles, at length nearly as long as them, not connivent. Sepals greyish-green, inside and out, patent after flowering, erect on the fruit. Young carpels pilose. See *Rep. B.E.C.*, 1928, p. 783. *R. Leyi* is different.—W. WATSON.

Rosa canina L. [var. *Pouzini* (Tratt.)], f. *Wolley-Dodii* Sudre. Cooper's Hill, Runnymede, Surrey, August 23, 1931. The whole gathering has been seen by Lt.-Col. A. H. Wolley-Dod, who says they are "all correctly named, and a very good series." The leaves had fallen from some of the fruiting shoots and I have added some leafy shoots, that should have been flowering shoots, to supplement them.—J. FRASER. "Quite correct and a very good match for the original *R. stylosa*, var. *evanida* Chr., from Ham Common. Some of the specimens are rather small and defoliated but all show the characteristics adequately."—WOLLEY-DOD.

×*Rosa Rogersii* W.-D. (*R. tomentosa* × *canina*). Langdale, Westmorland, July 27, 1931. Although a very similar form of *R. tomentosa*, var. *scabriuscula*, was common there, I could only find one bush of the hybrid. It is, I believe, the same bush which I found before and probably the identical one from which Rogers first gathered it, labelling it "*R. tomentosa*, var. *scabriuscula* Sm., with *canina*-like leaves, rather frequent," indicating that he probably took all the *scabriuscula* forms for the same hybrid. It is nearer *R. tomentosa* than *R. canina* but the influence of the latter is seen in its comparatively simply serrate, subglabrous leaflets, and a marked degree of infertility in the fruit, not quite amounting to barrenness as is usually the case in *spinosissima* hybrids. The parentage was suggested by Keller.—A. H. WOLLEY-DOD. "Quite an interesting hybrid. On the larger leaves near the inflorescence, I can find no subfoliar glands, except on the midribs and primary nerves, but on the small primordial leaves at the base of the flowering shoots are a few scattered all over the surface. This and the oval leaflets are evidence of *R. canina*, as well as the few hairs on the midrib and primary nerves. The prickles on the stem, the long peduncles, the fine serratures of the leaflets, etc., are evidence of *R. tomentosa*."—FRASER.

Rosa tomentella Lem., var. *decipiens* Dum. Woodland, Llanberis, Carnarvon, August 27, 1931.—Miss I. M. ROPER. "This specimen has been to Dr Keller who labels it *R. abietina* Gren., var. *typica* R. Kell., with no further comment. This species has no representative in Britain, though the name was applied with some confidence by Dr G. A. Boulenger to the variety I call *R. dumetorum*, var. *mercica*. It is a small species found mainly in the Alps, and has received various treatments by continental rhodologists, the consensus of opinion leaning towards its being allied to *R. obtusifolia*, to which species Miss Roper thought it should belong. My own opinion is equally decided that it is some *tomentosa* form, though perhaps not of the Scabriusculae as I at first thought. I regret I am unable to name it."—WOLLEY-DOD.

Rosa omissa Déség., var. *pseudo-mollis* (E. G. B.). Clawton, N. Devon, June 1931. Coll. H. H. HARVEY, comm. G. C. DRUCE. I should much prefer to put in under *R. Sherardi*.—G. C. DRUCE. "The nomenclature is the old one, and I now call it *R. Sherardi* Dav., var. *typica*. f. *pseudo-mollis* (E. G. Baker) W.-Dod, but there is really nothing to take these specimens off var. *typica*. The form is characterised by smaller leaflets, more arcuate prickles, and less erect sepals, but it shades off imperceptibly into the type and several of the sheets in my herbarium might just as well be referred to the latter, as this one is. It is possible that I gave the name of f. *pseudo-mollis* to the Rev. H. H. Harvey, and would not deny that it might equally well be put under that."—WOLLEY-DOD.

Pyrus Aria (L.) Ehrh., forma. [X.4]. Brightwell, Oxon, July 1931. —G. C. DRUCE. "I call this *P. Aria* sub-sp., with rather more numerous lateral veins than usual in the upper leaves."—DRABBLE.

Pyrus latifolia (Lam.) Syme. Ness-side, Inverness, August 8, 1931. On the rough river-bank where it is almost certainly a planted tree. *P. intermedia* grows with it.—G. C. DRUCE and R. H. CORSTORPHINE. "Yes, the true *P. latifolia*. I have it from the same station."—FRASER.

Crataegus monogyna Jacq., var. Torberry Hill, South Harting, Sussex, July 18, 1931.—E. B. BISHOP and W. BIDDISCOMBE; also July 20. 1931.—Coll. C. L. WILDE. comm. G. C. DRUCE. "Ordinary *C. monogyna* Jacq."—DRABBLE.

Crataegus oxyacantha L. [C.28]. Ryash Wood, West Kent, August 24, 1930.—J. E. LOUSLEY. "*C. oxyacanthoides* Thuill."—DRABBLE.

Drosera intermedia Hayne. Thursley Common, Surrey, August 10. 1931.—R. J. BURDON and J. E. LITTLE.

Lythrum hyssopifolia L. Burnham, Bucks, September 19, 1931. A very rare plant of the county, shown me by Mr E. B. Basden. It grew in wet agrestal ground. It was last seen in the county in 1861.—G. C. DRUCE.

Epilobium tetragonum Curt. Ketton, Rutland, August 1931.—F. A. SOWTER. "The material I have seen is incomplete and unsatisfactory. Neither flowers nor 'stolons' are shown. A note on the stigma should have been sent. Not *tetragonum*; possibly *Lamyi* Schultz."—DRABBLE.

Epilobium tetragonum L. Garden weed, Dalmeny, Shavington Avenue, Chester, June 16, 1931.—C. WATERFALL. "The stem of this is easily compressible, the leaves are mostly alternate, and too widely apart for *E. tetragonum*. I name it *E. obscurum* Schreb., an allied species."

—FRASER. "Certainly not *tetragonum*. No flowers with ripe stigmas are present on the specimen I have seen and the stolons are broken, but the plant seems to be *E. obscurum* Schreb. Collectors should make a note on the form of the stigma when sending Epilobia."—DRABBLE. "The author is Curtis—not Linnaeus, but the plant contributed is *E. obscurum* Schreb."—LOUSLEY.

Sison Amomum L. Hort. Origin, ditch, Pulford, Cheshire, August 21, 1931.—C. WATERFALL. "Correct. Very common on damp clay soil in the southern counties."—FRASER.

Pimpinella Saxifraga L., var. *dissecta* With. Assendon, Oxon, September 22, 1931.—G. C. DRUCE. "Neither of my two specimens could be described as finely cut, and can only be the common form."—FRASER.

Prangos Uechtritzii Boiss. et Haussk. Barry Dock, Glamorgan. August 3, 1931. Three large bushy leaves about two feet high were found at Barry Dock in August 1930. The parsley-like smell when bruised, and the presence of numerous scattered vascular bundles and gum canals, suggested an umbellifer of near affinity to *Ferula*. (See *Rep. B.E.C.*, 1930, 354). In 1931 the plant flowered and provided material for identification and exchange. It agrees very closely with the single specimen in the British Museum, which shows leaves, flowers, and very young fruit, and also with the description in Boissier's *Flora Orientalis*, ii., p. 938. The longer, thicker, and more rigid leaf segments, and the involucels linear, subulate, instead of lanceolate cuspidate, distinguish it from *Prangos ferulacea* (L.). The Kew Herbarium possesses a single specimen which has recently been identified as *Prangos Uechtritzii* by Eug. Korovin. The material is immature, showing only flowers and ovaries from which the petals have just fallen. It was collected by W. Siehe and determined by Haussknecht as *Ferula* cf. *communis*. The leaves are scabrid, whereas Boissier describes *P. Uechtritzii* as glabrous. The specimen closely resembles *P. asperula* Boiss. as represented in the herbarium, though it was not possible to be satisfied as to the presence of hairs on the backs of the petals.—R. L. SMITH and R. MELVILLE. N.B.—This plant when distributed was labelled ? *Ferula*.—P. M. H. "*Ferula angulata* Schlectendal, Kurdistan, and possibly Mesopotamia, or Mosul. (Syn. *Ferulago linearifolia* Boiss.) Its nearest ally is *Ferulago thyrsiflora* Koch, from Crete, but this has twice the number of rays in the primary umbel. The leaves are similar in both, and in this respect differ from all other species of *Ferula* in the Kew Herbarium."—FRASER.

Anthriscus Scandix Beck. Dry bank, Sand bay, near Weston-super-Mare, N. Somerset, June 3, 1931.—C. WATERFALL.

Oenanthe Lachenalii C. Gmel. Salt marshes, Redcar, N. Yorks, v.-c. 62, September 13, 1931.—W. A. SLEDGE. "Correctly determined."—FRASER.

Galium anglicum Huds. [C.1]. Plentiful on walls in several places in the town of Mildenhall, West Suffolk, July 11, 1931.—J. E. LOUSLEY. "Correctly named; a remarkably slender plant."—FRASER.

Valeriana officinalis L., var. Ashdown, Berks, June 20, 1931. This is clearly an intermediate since it possesses characters of both the type and *sambucifolia*. See Secretary's Report, p. 558.—G. C. DRUCE. "The variety seems to depend on the pale-pink or flesh-coloured corolla."—FRASER.

Aster Tradescanti L. [3945]. Merton, Surrey, October 10, 1931. One of the North American Asters, and, of course, a garden outcast, but now well-established by a neglected lane at Raynes Park. *A. Tradescanti* is an attractive white-flowered Michaelmas Daisy.—C. E. BRITTON. "Yes, it was the first species to be named Michaelmas Daisy."—FRASER.

Erigeron acris L. Sand dunes, near Ainsdale, S. Lancs, July 7, 1931. —C. WATERFALL.

Guizotia abyssinica Cass. Splott, Cardiff, October 1931. This species has been recorded from many parts of Britain, but generally from rubbish dumps. The plant is extensively cultivated in India and elsewhere for the sake of the oil extracted from its seeds. Its frequent appearance in this country is due to the fact that the seeds form part of various parrot foods. It must also be adventive in some of the grain-producing countries, because all these specimens were growing amongst typical grain aliens, and all the seeds obviously came from the same source.— R. L. SMITH. "Yes."—DRUCE.

Anthemis tinctoria L., var. *discoidea* (Willd.). Godalming, Surrey, July 29, 1931. Occurs near the Railway Station in some quantity and wholly of this discoid plant.—G. C. DRUCE. "The discoid form is rare. Some authorities put the species under *Cota tinctoria* Gay, because the receptacle does not elongate after flowering."—FRASER.

Matricaria Chamomilla L. Edge of woods, Belgrave Moat Farm, Pulford, Cheshire, July 11, 1931.—C. WATERFALL.

Senecio paludosus L. Origin, ? Wicken Fen, Cambs. Cult., Ledbury, Herefordshire, August 1931.—S. H. BICKHAM.

×*Senecio albescens* Burb. & Colg. (*S. Cineraria* × *Jacobaea*). Budleigh Salterton, S. Devon, July 9, 1931. This hybrid grows plentifully on the sea-front and is, I think, new to S. Devon.—G. C. DRUCE and Major R. ORME.

Senecio spathulaefolius DC., var. *maritimus* Syme. [C.200]. South Stack, Holyhead, Anglesey, v.-c. 52, June 19, 1931. Fairly plentiful and seen in about a dozen places along the cliff S.W. of South Stack.—J. E. LOUSLEY.

Centaurea nigra ?. Marshes near Belvedere, West Kent. The plants of this gathering were all growing together, but differ considerably in the proportion of deeply fimbriated scales. Coll. J. **Groves**, September 2, 1911, comm. J. W. **Long**. "A nice set of plants, but certainly not coming under *C. nigra* L. With one exception, all the specimens must be placed to *C. pratensis* Thuill., and on the whole they are excellent representatives of this species. I am excluding one plant, which is a typical example of *C. Jacea* L., sub-sp. *C angustifolia* Gugler. This is the second gathering of *C. pratensis* that I have seen from the marshes by the Thames in West Kent, and would seem to suggest that possibly it exists elsewhere in similar situations in the vice-county."—**Britton**.

Centaurea ——. Old marl pit, Newton Abbot, Devon, July 29, 1931. —R. J. **Burdon**. "A form of *C. obscura* Jord., with the phyllary-appendages brown rather than black and with the lower appendages very deeply pectinated. In many examples the heads are radiant, and simulate *C. pratensis* Thuill., but the latter can be distinguished by the upper appendages being less broad and more regularly fimbriated, whereas in *C. obscura* the very broad upper appendages are more frequently irregularly incised. There are also differences in the innermost appendages."—**Britton**. "It comes very close to *C. nigra* L. (*C. obscura* Jord.), but may not be admitted in the best type, because there are a few phyllaries with narrow appendages at the very base, the branches are long and slender, and July 29 is getting late for the type. I would say there is just a little of *C. nemoralis* Jord. in it. One of my two pieces is the f. *longiflora* C. E. Britton."—**Fraser**.

Centaurea nigra L., var. Torberry Hill, South Harting, Sussex, July 18, 1931.—W. **Biddiscombe**. "These specimens were gathered too early in the season, and none show any approach to the production of flowers. It is doubtful whether such immature examples serve any useful purpose in distribution. Apart from the canescent condition of the specimens (which, however, is not infrequent in downland Centaureas) it is not obvious what is the special feature that merits the term 'var.'. In any case, the plants represent *C. nemoralis* Jord."—**Britton**.

Arnoseris minima (L.) Schw. & Koerte. Allerthorpe Common, East Yorks, v.-c. 61, August 1931. Coll. G. A. **Nelson**, comm. W. A. **Sledge**. "This is, I think, a N.C.R. to 'The Comital Flora'."—**Druce**.

Arnoseris minima Schw. & Koerte. [3815]. Woodham, Surrey, July 5, 1931. Extraordinarily abundant in a wheat-field at Woodham.—C. E. **Britton**. "A very large specimen of it. I have it from sandy ground near the same locality."—**Fraser**.

Hieracium praealtum Vill. Hungerford, Berks, June 4, 1931.—G. C. **Druce**.

Hieracium Bauhini Bess. Great Bedwyn, N. Wilts, June 4, 1931.—G C. Druce.

Hieracium grandidens Dahlst. [3940]. East of Farley Green, Surrey, August 9, 1931.—C. E. Britton.

Hieracium maculatum Sm. [3774]. Banstead Heath, Surrey, June 21, 1931. Plentiful in one place on Banstead Heath. Leaves prominently marked with brown and rusty-red.—C. E. Britton. "Correctly named, and a well-marked or blotched form of it."—Fraser.

Hieracium tridentatum Fr. [3813]. Ottershaw, Surrey, July 5, 1931.—C. E. Britton.

Hieracium ——. Bexley Hill, Lodsworth, W. Sussex, July 3, 1931.—R. J. Burdon.

Hieracium ——. W. Hoathly, E. Sussex, September 12, 1931.—R. J. Burdon.

Lactuca macrophylla A. Gray. Hort. Oxford. Origin near Shrewsbury. A native of the Caucasus. July 1931.—G. C. Druce. "This N. American species can only be an escape or outcast. The Blue Sow Thistles attract for a time and then get discarded."—Fraser.

Sonchus asper Hill, var. *integrifolius* Lej. A garden weed at Newport, Isle of Wight, August 1931.—J. W. Long. Also from Freshwater. Isle of Wight, August 1931.—Coll. J. Groves, comm. J. W. Long. "Right for the simply sinuate-dentate variety."—Fraser. "A very distinct variety—probably cultivation will show it is a distinct subspecies."—Druce.

Erica Tetralix L. Abnormal form. Flowers replaced by heads of sepaloid bracts. Near Moreton, Dorset, October 15, 1931. With normal heads from adjoining clump taken at the same time. All the heads on a good-sized clump were similarly affected. I should be glad of comments and records of the occurrence of this or similar forms.—L. B. Hall.

Erica vagans L. Near Bagshot, Berks. Looking native in heathland, but probably introduced with other shrubs. Told to me by Major Orme, July 1931.—G. C. Druce. "Yes, *E. vagans* L., var. *rubra* Hort."—Fraser.

Limonium ——. Bank of the Conway estuary near Talycafn, Denbighshire, v.-c. 50, August 29, 1931. These plants seem intermediate between *L. vulgare* and *L. humile*, but most of them are perhaps nearest the former. I did not see any typical *L. vulgare* in the locality.—A. Wilson. "This is presumably *L. Limonium* (L.) Dr., var. *pyramidale* (Dr.), of the *Plant List*, though I have not seen a description of that var."—Hall. "This form is generally included in var. *pyramidale*

Dr."—**Drabble.** "Rightly or wrongly, I have been naming this form *Limonium vulgare* Mill., var. *pyramidale* Druce. *Statice serotina* G. & G. and *S. serotina* Reichb. are given as synonyms, but the bracts and flower are too long for this variety."—**Fraser.** "Is not this *L. vulgare*, var. *pyramidale*?"—**Little.** "A fine large form of *Limonium vulgare* Mill., of which I have seen very similar specimens from other Welsh estuaries. Probably the richness of the estuarine mud accounts for the luxuriance of the plant. It may come under var. *pyramidale* Druce."—**Lousley.**

Statice maritima Mill. Berry Head, S. Devon, July 17, 1931. This is the holotrichous plant.—**G. C. Druce.** "Yes, *S. maritima* sensu stricto."—**Drabble.**

Primula elatior Jacq. [C.25]. With hybrids with *veris* and *vulgaris*, near Radwinter, N. Essex, April 18, 1931.—**J. E. Lousley.**

Primula farinosa L. Kettlewell, W. Yorks, June 24, 1931.—**H. Foster.**

Erythraea Centaurium Pers., var. *conferta* Wheldon & Salmon. Drigg sand-hills, Cumberland, July 31, 1931. This struck me as a very different form from the type, and not differing greatly from my specimens of var. *capitata* Koch, but there is some difference, and these agree so well with the description of var. *conferta* that I venture to suggest the name. Mr W. H. Pearsall, who saw the specimens, went no further than *E. Centaurium* Pers.—**A. H. Wolley-Dod.** "Yes, var. *conferta*, by comparison with the specimens on Salmon's sheets in Herb. Mus. Brit."—**Drabble.**

Erythraea Centaurium Pers., f. or var.? Drigg sand-hills, Cumberland, July 31, 1931. Growing with the plant I have called var. *conferta*, but always smaller and dwarfer, with a wide gap showing no intermediates between the two. As may be imagined, the plants were hardly to be seen without going on one's hands and knees, but they did not seem to mix with var. *conferta*, though growing close to them, apparently preferring the damper parts of the hollows. Mr Pearsall said he could see nothing but *E. Centaurium* in them. Had that been a perennial species the suggestion that these small forms were a first year's growth might have occurred. They appear to be a distinct form but I can find no characters except size to distinguish them.—**A. H. Wolley-Dod.** "This is very difficult to determine, but I think some of it, at least, is a dwarf form of *E. pulchella* Fr."—**Drabble.**

Gentiana Amarella L. [3903]. Banstead Heath, Surrey, September 6, 1931. Plentiful in one area on Banstead Heath, with pale flowers almost white in appearance but really of a very pale mauve, this effect being due to the petals being purple on the exterior and white on the upper surface. Growing with plants bearing normal-coloured flowers.—**C. E. Britton.** "*G. Amarella* sensu stricto, I think."—**Drabble.**

"Right for the species with sepals nearly equal, but some of the flowers had their parts in fours, and liable to mislead at the first glance. Their pale mauve colour is not very clear when dried."—FRASER.

Gentiana germanica Willd. Assendon, Oxon, September 22, 1931.—G. C. DRUCE. "Yes."—DRABBLE. "Yes, many of the flowers have been pierced near the base as if by bees or wasps, in quest of nectar, but there are no nectaries in *Gentiana*."—FRASER.

Symphytum tuberosum L. Hort. Hitchin (ex banks of R. Findhorn, Morayshire, 1928), June 1931.—Leg. K. D. LITTLE, comm. J. E. LITTLE. "Quite correct. The species is more common and more widely distributed in Scotland than in England. It extends to Islay and Moray."—FRASER.

Pneumaria maritima (L.) Hill (*Mertensia*). Kirk Bay, S. Ronaldshay, Orkney, in great plenty on the low sandy banks, September 7, 1931.—G. C. DRUCE.

Myosotis brevifolia Salmon. Slopes above Thirlspot, Cumberland, July 23, 1931. I send a few sheets from a locality in which I found it years ago, specimens from which Salmon thought were the finest he had seen. These, I fear, cannot be so described, but they were all I could get, so I hope will be not unacceptable.—A. H. WOLLEY-DOD. "Correctly named; characteristic specimens."—WADE.

Myosotis caespitosa K. F. Schultz. Marsh, Llanedyrne, near Cardiff, v.-c. 41, July 10, 1931. I send these specimens, although they are rather poor, as examples of what I consider typical *caespitosa*. *M. caespitosa* varies much in habit, simple stemmed states being quite as frequent as caespitose, the two states usually being present in any considerable population of the plant.—A. E. WADE. "I agree. Another name for it is *M. lingulata* Lehm."—FRASER.

Myosotis versicolor Sm., var. *lutea* DC. Bucklebury Common, Berks, June 2, 1931.—G. C. DRUCE. "The flowers are bright yellow, and the plant very slender. The specimens should be correct, but Jordan named this or a similar one *M. Balbisiana*."—FRASER. "The correct name for this is var. *Balbisiana* (Jord.). De Candolle does not distinguish between the two yellow-flowered varieties of *Myosotis versicolor*, to which Vestergren (Uber den Verwandtschaftskreis der *Myosotis versicolor* (Pers.) J. E. Sm., *Svensk Bot. Tidskrift*, 1930, Bd. 24, H.3, pp. 449-467) gives specific rank as *Myosotis lutea* (Cav.) Hoffm. & Link and *Myosotis Balbisiana* Jordan. The former is confined to the Iberian Peninsula."—WADE.

Lithospermum officinale L., var. *pseudolatifolium* C. E. Salmon. Bonchurch, Isle of Wight, August 1928, and Apes Down, Isle of Wight, August 1931.—J. W. LONG. "This differs from the type by having the leaves and bracts broader and rounded at the base; in the type they are cuneate."—**Fraser.**

Verbascum nigrum × *Thapsus*. [3915]. Hort. New Malden, Surrey, September 14, 1931. One fine plant of this originated in my garden, where in recent years plants of both parent species have grown. It proved to be a sterile hybrid, in height exceeding *V. Thapsus*, but with the habit of *V. nigrum*, the upper part of the stem producing several erect flowering branches. The corolla of this plant was almost primrose-yellow in colour, and as large as the deeper-coloured corolla of *V. Thapsus.* The filaments of the two lower stamens were glabrous on the outer side and clothed with purple-coloured hairs on the inner surface. The remaining three stamens showed filaments with mixed white and purple hairs. The anthers were all reniform; pollen imperfect; style exceeding stamens.—C. E. **Britton.** "The shape of the leaf, its size and decurrence on the stem show the influence of *V. Thapsus*; and the slender spike, small calyx and corolla show the presence of *V. nigrum.*"—**Fraser.**

Verbascum longifolium DC. [944]. Girls' Grammar School, Hitchin, Herts, August 29, 1931. Self-sown, probably from plants on Windmill Hill adjacent, of which [822] was determined by Dr W. B. Turrill. For notes, see *Watson B.E.C. Rep.*, 79, 1930. The note in *Rep. B.E.C.*, p. 363, 1930, line 3 and seq., should be deleted, as a number of fresh errors are introduced into what was intended to be a correction.—J. E. **Little.** "Yes, *V. longifolium* DC. is very similar to *V. speciosum* Schrad. *V. longifolium* Tenore is a very woolly plant."—**Fraser.**

Linaria Linaria (L.) Karst., forma. Westcliff-on-Sea, Essex, August 3, 1931.—Coll. W. W. **Mason**, comm. G. C. **Druce.** Var. *tenuifolia*, leaves very narrow, almost grass-like, about 2 mm. wide, flowers normal; the opposite condition is var. *latifolia.*—G. C. **Druce.** "This linear-leaved plant occurs abundantly near the coast in the Isle of Wight, Cheshire, Yorkshire, and other parts of England, and appears to be quite worthy of varietal rank."—**Drabble.** "The leaves are narrowly linear and very dense. This is the second I have received this year, but there seems to be no special name for it."—**Fraser.**

Scrophularia vernalis L. [C.21]. Roadside, near Gloddaeth, Carnarvon, June 8, 1931. Varying from small plants a few inches high in flower with small leaves, to large plants several feet high with leaves 3 in. broad. A surprising range of variation for plants within the same colony, and all under practically the same conditions. A genetic explanation is probable.—J. E. **Lousley.**

Scrophularia vernalis L. Near Llandudno, Carnarvon, July 8, 1931. —H. **Foster.**

Scrophularia vernalis L. Wollaton Park, Notts, May 18, 1931.—R. **Bulley.**

Veronica hybrida L. Llandudno, Carnarvon, July 8, 1931.—H. Foster.

Euphrasia brevipila Burn. & Gremli. [878]. Killin, Perthshire, July 1930.—Leg. K. D. Little, comm. J. E. Little. "*E. brevipila*, var. *notata*, I think, though I am not at all sure that *notata* ought to be placed under *brevipila*."—Drabble. "Most authorities agree in attributing to *E. brevipila* the shortly-stalked glandular hairs its name implies, but the most marked character of these plants is the abundant supply of relatively long and very stout glandular hairs, together with densely hairy foliage. They are, perhaps, best referred to the var. *notata* Pugsl. of this species. Townsend named somewhat similar plants *E. notata* (*E. Rostkoviana* × *brevipila*), but until we are more definitely agreed as to the limits of the various species of *Euphrasia* any present suggestion of hybridity is mere speculation. Of the 48 plants in this gathering, 22 are simple and their stems show almost throughout their whole length numerous long glandular hairs—often of 4-5 cells."—Pearsall.

Euphrasia nemorosa Pers., forma. Drigg Sand-hills, Cumberland, July 31, 1931. These dwarf stunted forms were quite a feature of damp hollows in the sand-hills, their dark colouring rendering them conspicuous in the whitish sand in spite of their small size, rarely more than an inch high. Mr Pearsall considers it to be a state due to environment.—A. H. Wolley-Dod. "A small congested form of *E. nemorosa*."—Drabble. "Yes, a densely congested form of *E. nemorosa*, which occurs on the sand-dunes of Cumberland, Lancashire, and other counties and has hitherto not been described or named. Its small stature and compact habit are due to adverse environmental conditions."—Pearsall.

Euphrasia nemorosa Pers. Cotgrave, Notts, August 26, 1929.—R. Bulley. "The eglandular plants are *E. nemorosa*, and from these I cannot distinguish those with a very few short glandular hairs by any other character."—Drabble. "Yes, *E. nemorosa*, with a few short, stout, glandular hairs on most plants."—Pearsall.

Euphrasia occidentalis Wettst. Luxuriant wet season growth, Polperro, Cornwall, July 20, 1931.—F. Rilstone. "Yes, very fine *occidentalis*."—Drabble. "Yes, especially fine examples of this species." —Pearsall.

Euphrasia micrantha Reichb. Roadside, Glen Dochart, Perthshire, August 1920.—F. Rilstone. "*E. micrantha* Reichb."—Drabble and Pearsall.

Euphrasia ——. Two Bridges, Dartmoor, Devon, July 22, 1931.—R. J Burdon. "The glandular plants are *E. anglica* Pugsley."—Drabble. "*E. anglica* Pugsl. The densely glandular plants belong to this species. On many sheets there are also eglandular plants of other species; these have been separated."—Pearsall.

Euphrasia Kerneri Wettst. Cotgrave, Notts, August 26, 1929.—R. BULLEY. "Rather large-flowered *nemorosa*."—DRABBLE. "Not this, but *E. nemorosa*."—PEARSALL.

Euphrasia nemorosa H. Mart. [2474]. Fordham Heath, N. Essex, v.-c. 19, July 27, 1931.—G. C. BROWN. "I call this *E. Pseudo-Kerneri* Pugsley."—DRABBLE. "*E. Pseudo-Kerneri* Pugsl."—PEARSALL.

Melampyrum vulgatum Pers., under var. *laurifolium* (Beauv.). Compton Wood, Berks, July 1931. This has too narrow leaves normally for *laurifolium*, which also occurs here. I am sending it to M. Beauverd for his opinion.—G. C. DRUCE.

Mentha Alopecuroides Hull. [2473]. N. Essex, v.-c. 19, September 10, 1931. In large quantity and very fine on waste ground at West Bergholt, where I have known it for nearly twenty years.—G. C. BROWN. "All uniform and quite correct. The specimens are well selected, showing the large and beautiful inflorescence of this strong-growing Mint, which can easily reach 3-5 ft. in height in the garden. The oldest name is *M. alopecuroides* Hull, *Brit. Fl.* i., 126 (1799). Following the late Jean Briquet, who considered that all the Mints of this group are hybrids of *M. longifolia* × *rotundifolia*, I name it ×*M. niliaca* Jacq., var. *alopecuroides* (Hull) Briquet (1894), and not necessarily a first cross."—FRASER.

Mentha ——. Wet edge of field near Ledbury, Hereford, v.-c. 36, September 1931.—S. H. BICKHAM. "*M. citrata* Ehrh. with its glabrous calyx and pedicels, and characteristic Bergamot scent. The stems and leaves are subglabrous, but the hairs are very few. Very fine specimens, well dried and all uniform."—FRASER.

Mentha verticillata L. [3942]. Towyn, Merioneth, July 28, 1931. A form of *M. verticillata* possessing, in addition to the usual Mint odour, a very pleasant fragrance, which is, I suppose, the basil-like odour mentioned by writers as being characteristic of certain forms of *Mentha*. This fragrance is still present in the dried plants.—C. E. BRITTON. "Yes, *M. verticillata* L. and the var. *paludosa* (Sole), *Menth. Brit.*, Pl. 22. The gathering is uniform. Sole's plate shows one good spike, but I have a sheet with eleven. It is not always constant in the same spot, but reverts to the verticillate state when moisture is adequate. In the garden it never produces a spike in my experience. In hedges, ditches and ponds, it is verticillate and loses much of the hair upon it. Many of the pedicels have no hairs, and that is rare for any form of *M. verticillata*."—FRASER.

Mentha arvensis L., var. *cuneifolia* Lej. et Court. Cult. Kew, from Thames banks, Hampton Court, Middlesex, v.-c. 21. A subglabrous Mint with apple-green, elliptic leaves, attenuated at both ends, and long calyx teeth for the species.—J. FRASER.

Thymus Pulegioides L., var. *Chamaedrys* (Fr.) Ronn. Frilford, Berks, August 1931.—G. C. Druce. "Correct by the elongated inflorescence, and the elevated, incurved nerves beneath the leaves, but the leaves are remarkably narrow. Broad and narrow leaves are frequent on the same common."—Fraser.

Thymus Pulegioides L., var. *Chamaedrys* (Fr.) Ronn., f. *denticulatus* Wimm. et Grabowski. Stowe Wood, Oxon, July 1931.—G. C. Druce. "Evidently correct. Many of the leaves and floral bracts are denticulate—a rare thing in *Thymus*."—Fraser.

×*Thymus Jacksonii* Ronniger. (*T. neglectus* × *Pulegioides*, var. *Chamaedrys*). Selsley Common, Gloster, July 1, 1931.—G. C. Druce.

Calamintha Acinos Clairv., flore albo. [C.14]. A large colony near which grew the normal-coloured form, near Rampart Field, Icklingham, West Suffolk, August 3, 1931.—J. E. Lousley.

Salvia Verbenaca L. Dry banks, Uphill, near Weston-super-Mare, N. Somerset, May 20, 1931.—C. Waterfall. "The leaves are too deeply divided for this. Most of the British plants fall into *S. Horminoides* Pourr."—Fraser.

×*Scutellaria Nicholsonii* Taubert. (=*S. galericulata* L. × *minor* Huds.). [C.6]. Near Wick Pond, Virginia Water, Surrey, August 9 1931.—J. E. Lousley. "Yes, I collected it in that locality in 1883."—Fraser.

Stachys germanica L. Near Woodstock, Oxon, October 3, 1931. To my joy, after over twenty years' absence, this beautiful and rare species once more appeared and in fine condition.—G. C. Druce.

Stachys palustris L. Canal side, by Trent, Notts, August 22, 1931.—R. Bulley.

Stachys annua L. Grain alien. Splott, Cardiff, September 1931. This somewhat rare alien appears sparingly with us most seasons, but this year there was quite a nice colony of plants.—R. L. Smith. "Correct. It was first discovered in Kent, in 1830, and is figured in *English Botany, Suppl.*, 2669. I have it from Oxted, Surrey."—Fraser.

Ajuga reptans L., forma *rosea*. St Leonard's Forest, W. Sussex, v.-c. 13, May 31, 1931. Very abundant, mixed with type.—Miss I. M. Roper.

Chenopodium glaucum L. [3865]. Merton, Surrey, August 22, 1931. —C. E. Britton.

Chenopodium glaucum L. Farm buildings, Lurgashall Mill Pond, W. Sussex, September 14, 1931.—R. J. Burdon. "Mr G. M. Ash sent me fresh material of this Lurgashall plant, from which I made the following notes:—Seeds dark brown, shining, very finely punctulate, 5 in a row give an average of 0.85 mm. Radicle prominent. The keel mentioned by Coste is not evident in the fresh fruit; and comparing with a sheet of *C. glaucum*, Isle of Wight, 1915, J. W. Long, this latter also has no acute keel but is rounded or only obscurely keeled."—LITTLE. "All according to the characters of the species. The tiny seeds have a very narrow keel, but not all botanists are agreed about this."—FRASER.

Atriplex glabriuscula Edmondst., var. *Babingtonii* Woods. [2447]. Shingle by River Blythe, Walberswick, East Suffolk, v.-c. 25, September 7, 1931. With many other forms of *A. hastata* and *glabriuscula* and quite probably a hybrid with *A. hastata*, var. *oppositifolia*.—G. C. BROWN. "A near ally of *A. hastata*, but the stems and leaves are reddish, not green, and the branches are longer than the main axis."—FRASER.

Suaeda maritima Dum. Tidal Creek, Wootton, Isle of Wight, October 1931.—J. W. LONG. "On the Int. Phytogeog. Excursion in 1911 we noticed this robust erect form of this species on Hayling Island; it may be called var. *erecta*."—DRUCE.

Polygonum cuspidatum Sieb. & Zucc. [B.110]. Waste ground, Mitcham, Surrey, September 5, 1930. A well-established alien in this district. Determined by Kew.—J. E. LOUSLEY.

×*Rumex Weberi* Fischer-Benson (=*R. Hydrolapathum* × *obtusifolius*). [C.26]. Near Alfriston, East Sussex, August 30, 1931. I sent a speciment of this gathering to Dr Karl Rechinger of Vienna, who says "*R. obtusifolius* L., sub-sp. *agrestis* × *Hydrolapathum*. Eine praechtige und seltene Hybride" (*in litt.*, 11/10/31). The parentage is likely as both species involved grow near. The most obvious characters are the influence of *R. obtusifolius* in the leaves and of *Hydrolapathum* in the habit and fruit.—J. E. LOUSLEY.

Rumex sanguineus L. Hort. Origin. The Grounds, Lynn, Cheshire, August 11, 1931.—C. WATERFALL. Note by Distributor.—Mr Waterfall contributed both sheets of plants and packets of seeds. "Correct. It has only one tubercle on one of the sepals, and that often poorly developed."—FRASER. "Mr Waterfall's reference to Druce, 1st List, No. 2201, makes clear that his seed packets are sent as the fruits of the restricted plant, of which he had previously (*Rep. B.E.C.*, 119, 1911) sent sheets. His sheet of 1911 had and still (1932) retains the dark purple veining of the segregate in contradistinction to the red veins often found in *R. viridis*, f. *sanguinalis* Moss, and in *R. obtusifolius*. In his valuable paper on 'Fruits and Seeds' (S.E. Union of Scientific Societies, 1928), C. E. Salmon gave (p. 49) the following contrasting features of two closely allied plants:—

R. viridis (Sibth.).	*R. sanguineus* L. (restr.).
Fruiting Perianth.	Fruiting Perianth.
Circa 2.5 mm. long, segments oblong and rounded at the apex.	Circa 2.0-2.25 mm. long, segments oblong, and not quite so bluntly rounded at the apex.
Nuts.	Nuts.
Circa 1.75 mm. long, tapering to an acute apex, and tapering slightly to base.	Slightly smaller (circa 1.5 mm. long), tapering to an acute apex, but more rounded at base.

These distinctions are very fine and are not easy to verify closely. I have noted from Mr Waterfall's fruits, which would have been in better condition for the purpose in September or October, that the fruiting segments are 2.25-2.75 mm. long and the nuts 1.25-1.75 mm. long. Hitchin fruits of *R. sanguineus* (*Watson B.E.C. Rep.*, 444, 1927) have fruiting segments 2.25 mm. long and nuts 1.0-1.5 mm. long, of a rather darker chestnut brown. Local fruits of *R. viridis* (1926) have fruiting segments 2.0-3.0 mm. long, and nuts 1.5 mm. long and 1.25 mm. broad. It would appear, therefore, that there is some overlap in the respective measurements. The nut of *R. sanguineus*, placed side by side with that of *R. viridis*, does seem to be rather more rounded at the base. A point not mentioned by Salmon is now submitted for verification by members, namely, that in *R. viridis* the tubercle is slightly longer in vertical than in transverse diameter (1.0 mm. × 0.75 mm.), whereas in *R. sanguineus* (see Mr Waterfall's fruits) these two diameters are more nearly equal and the tubercle consequently more orbicular. In the form of its tubercle *R. viridis* shows some approach to those of *R. conglomeratus* Murr., in which the measurements are 1.50-1.75 mm. long and 0.75-1.0 mm. broad, still rounded, however, at both ends—' oval-oblong ' (Syme). Asch. & Graebn. (*Fl. n.-o. d. Flachl.*, 268) remark that further observation may make necessary the reduction to one species of *R. sanguineus* (aggr.) and *R. conglomeratus*. Of the latter they record a var. *atropurpureus* Asch., with petioles and veins dark purple. Hab., sunny situations. This would appear analogous to the *R. sanguineus*, 1911, of Mr Waterfall."—LITTLE.

Rumex rupestris Le Gall. Perranporth, Cornwall, August 7, 1929. —Leg. F. RILSTONE, comm. J. E. LITTLE.

Euphorbia portlandica L. Sand dunes, near Ainsdale, S. Lancs, July 7, 1931.—C. WATERFALL. " Correct; easily recognised by its numerous leafy branches, and numerous floral bracts."—FRASER.

Ulmus minor Mill. (*U. stricta* Lindl.). Launceston, E. Cornwall, July 10, 1931. See Secretary's *Report* for 1930, p. 524. This exactly agrees with Miller's description. Miller's *minor* has wrongly been applied to other species.—G. C. DRUCE. " The specimens undoubtedly belong to the Cornish Elm, which is *Ulmus stricta* Lindl. (*U. nitens*, var. *stricta* Henry)."—JACKSON. " This is the Cornish Elm, by whatever name or combination of names it may be called. As I understand Miller, his description ' *Ulmus minor, folio angusto, glabro* . . . and by some called the upright Elm,' applies better to the Cornish Elm than his other description, '*Ulmus minor, folio angusto, scabro,*' which applies to another narrow-leaved Elm."—Fraser.

Betula nana L. Moorland, 1600 to 2000 feet, by stream at Uisgie Gail, East Inverness, v.-c. 96, July 28, 1911.—Coll. W. A. Shoolbred, comm. National Museum of Wales.

Quercus Cerris L., var. *laciniata*. Wayside. Cossall, Notts, September 19, 1931.—R. Bulley.

Salix alba L., var. *stenophylla* Fraser. River Mole below Esher, Surrey, v.-c. 17. Catkins May 3, leaves September 13, 1931. The twigs are short in the case of both catkins and leaves because the tree is old. The narrowness of the leaves is not due to age. I have the variety from England, Scotland, and Ireland. Andersson in his monograph has a narrow-leaved one named *S. alba*, var. *angustata*, but he says of the leaves "plerumque obsolete serrulata," which does not apply to any of my specimens.—J. Fraser.

Salix repens L., f. *prostrata* (Sm.). [713]. Ham Common. Surrey. v.-c. 17, May 6, 1929, and August 16, 1931; and May 12, 1929, and September 21, 1930. The two sets were due to a heath fire when the small colony got burnt.—J. Fraser.

Helleborine palustris (Mill.) Schrank. (*Epipactis palustris* Cr.). Braunton, N. Devon, July 18, 1931.—G. C. Druce.

Tamus communis L. (male). Climbing over low shrubs, The Green Lane, near Upton Heath, Cheshire, June 13, 1931.—C. Waterfall.

Allium sphaerocephalum L. Hort. Oxford, ex Jersey, July 1931. Its day seems threatened in Jersey.—G. C. Druce.

Allium Schoenoprasum L. Erwood, Brecon, June 30, 1931.—G. C. Druce. "Correct for the species, which has long been recorded for the county of Brecon."—Fraser.

Commelina nudiflora L. Very abundant about the Oil and Cake Works at Olympia sidings, Selby, East Yorks, v.-c. 61, September 1931. Determined by Kew.—W. A. Sledge. "*Commelina coelestis* Willd., a native of Central America, particularly Mexico. This is often cultivated in gardens and is nearly hardy. *C. nudiflora* L. is found in most tropical regions and is similar in the foliage and spathes, but the flowers are smaller and get pushed out of the spathe on a peduncle, 10 mm. long, bearing a terminal flower on a pedicel, 5 mm. long, with a lateral bud on a pedicel 2 mm. long. Both pedicels are articulate."—Fraser.

Juncus macer Gray (*J. tenuis* Willd.). Burnham, Bucks, shown to me by Mr E. B. Basden, August 3, 1931. It is a recent introduction there.—G. C. DRUCE. "Yes; it has spread much in recent years. A new record for Bucks."—FRASER.

Juncus castaneus Sm. Various gatherings from Ben Laoigh, Perth, v.-c. 88.—Contributed by the NATIONAL MUSEUM OF WALES.

Luzula multiflora DC., var. *congesta* (Lej.). Buddon Wood, Leicestershire, June 1931.—F. A. SOWTER. "Yes."—DRABBLE.

Potamogeton alpinus Balb., var. *Palmeri* Druce. Basingtoke Canal, near Ash Vale Station, Surrey, [C.9], September 6, 1931, and [C.9/Q.], July 26, 1931. E. C. Wallace found the same plant in the canal near Odiham, N. Hants, about 10 miles west of my locality. The first record (Druce, *Rep. B.E.C.*, 639, 1928) gives "in the river near Odiham," which may not refer to the same canal. My July specimens are a little torn; in September I obtained a better gathering and two ripe fruits.—J. E. LOUSLEY. "An extremely interesting and valuable contribution. This variety is queried in the *L.C.* list as being *alpinus* × *praelongus*. I have seen all the gatherings of this variety which have been distributed and many others which have not, but I have hitherto failed to find any definite evidence of *praelongus*. The leaf-shape is that of *alpinus*, the leaves lack the broad and rounded base of *praelongus* and show no trace of its hooded apex or the resultant splitting when dried. The entire absence of minute denticulations even on the margins of the youngest leaves eliminates *P. angustifolius*. The width of the stem leaves, their colour and blunt apices, are also against that species. The smooth margins also remove *P. lucens* from our consideration. The plant is a broad-leaved form of *P. alpinus*—var. *Palmeri* Druce—the greater leaf-width due to the calcareous nature of the mud upon which the plant flourishes. One of Mr Lousley's plants, however, showed 2 well-formed fruits—the first I have seen—and these are undoubtedly those of *P. alpinus*, and afford the most weighty evidence of the correctness of the name."—PEARSALL.

Potamogeton nitens Weber, var. *subgramineus* Hagstr. [C.13/A.]. Basingstoke Canal, near Byfleet, Surrey. Growing in fairly shallow water with var. *sub-intermedius*, August 16, 1931.—J. E. LOUSLEY. "One of the best gatherings of this variety I have yet seen. The plants are very carefully chosen and admirably presented, the essential involucral leaves being nearly always shown."—PEARSALL.

Potamogeton lucens L., var. *ovalifolius* M. & K. [C.32]. Byfleet, Surrey, August 16, 1931.—J. E. LOUSLEY. "A small form of *P. lucens* L., falling under the var. *ovalifolius* M. & K. *Deutschl. Fl.*, i., 849. 1823. Collectors often have difficulty in separating this from *P. angustifolius*. This is not surprising, as among the original examples so named by Mertens and Koch there are included undoubted forms of *P. angustifolius*. As an aid to the separation of these two species, I give the *lucens* characters possessed by these plants and not found in *P. angusti-*

folius. (1) The very pronounced cuspidation and excurrent midrib. The leaves vary in this respect, but a few would come under the var. *acuminatus* (Schum.) Fries. (2) The serrulate leaf-margins with prominent one-celled hyaline forward-pointing teeth, ± uniformly disposed. (3) The venation. Usually in *P. lucens* the leaves are 11-nerved—three minor nerves on either side running near the margin, and two stronger nerves (on either side) occupying the middle of the leaf at a greater distance from each other and the midrib. The ' nerve-spaces ' (between the transverse nerves) are normally short and broad—measured lengthwise in the direction of the midrib. In *P. angustifolius* these nerve-spaces are very variable, but on the whole longer, due to the influence cf *P. gramineus*, in which species they are often longer than broad. (4) The width of the leaves in relation to their length is greater than is usual in *P. angustifolius.* (5) *P. lucens* never produces floating leaves. In a gathering of *P. angustifolius* some are generally present. (6) The branchlets are usually nearly at right angles to the stem. In *P. angustifolius* they are more often at an acute angle. Mr Lousley's plants are very admirably displayed."—PEARSALL.

Potamogeton obtusifolius Mert. & K. [C.8]. Virginia Water, Berkshire, August 9, 1931.—J. E. LOUSLEY. " Yes, in splendid condition."—PEARSALL.

Potamogeton Friesii Rupr. [C.24/B.]. Ditch near Ilford, East Sussex, July 5, 1931.—J. E. LOUSLEY. " Fine fruiting examples of this beautiful species. The characteristic habit of the plants is well brought out."—PEARSALL.

Potamogeton Trichoides Cham. & Schl. [C.7/A.]. Ditch in Lewes Levels, near Ilford, East Sussex, June 5, 1931.—J. E. LOUSLEY. " Good fruiting examples of this."—PEARSALL.

Cyperus fuscus L. Various gatherings from Ringwood, S. Hants; Dorney, Bucks; Shalford, Surrey; Clevedon and Weston-in-Gordano, North Somerset.—Contributed by the NATIONAL MUSEUM OF WALES.

Eriophorum paniculatum (Lam.) Dr. (*E. latifolium* Hoppe.). Helwith Moss, near Anstwick, West Yorks, v.-c. 64, July 4, 1931.—W. A. SLEDGE.

Carex distans L. Salt marsh pool, St Osyth, N. Essex, v.-c. 19, June 14, 1931.—G. C. BROWN. " Babington's excellent description (*Man.* 470) gives ' edges of the bifid narrow beak rough.' The fruits of Mr Brown's plants agree with this but are much more rough inside the notch than outside. There are frequently a few scattered setae on the upper part of the margin below the beak. The glumes are very jagged at the top, with a rough excurrent midrib."—PEARSALL. " Yes."—LITTLE. " Yes, good specimens."—DRUCE.

Carex Goodenowii Gay, var. *recta* Asch. & G. Near Broadford, Skye, v.-c. 104, July 1930.—W. A. Sledge. "Agrees well with Kükenthal's description of this variety (*l.c.*, 316)."—Pearsall. "Yes, it is one of the most frequent and most marked varieties on wet Scottish moors."—Druce.

Carex divulsa Stokes, var. *congesta* Gren. [3820]. Towyn, Merioneth, July 20, 1931. I do not know that this varietal name has previously been applied to any British form of this species. The var. is described in Grenier's *Flore de la Chaîne Jurassique*, where it is said to have the habit of *C. muricata* L. (*C. contigua* Hoppe), but possesses the characteristic ligules and fruits of *C. divulsa*. This var. is frequent at Towyn, where I first gathered it in 1928.—C. E. Britton. "Unquestionably *C. divulsa*, but with unusually congested spikes. Kükenthal (*Pflanzenreich*, iv., 20, 162) gives 'spikelets subglobose-ovate, upper contiguous, lower 2-4 remote, lowest shortly bracteate' and is followed by most authors. He has no variety describing this form, which, however, agrees with Grenier's var. *congesta*, possessing 'spikelets approximate, with the lowest scarcely separated.' The fruits are ovate-lanceolate, plano-convex, pale green, very obscurely veined, 3½-4 mm. long, and slightly rough near the top on shoulders and beak. Kükenthal (*l.c.*) describes the nut as oval, but his figure (p. 155) represents it as somewhat quadrangular, with slightly square shoulders. Most of the nuts on 3820 are oval, but a few showed obvious traces of being subquadrangular."—Pearsall.

(*Note by Distributor.*—All the gatherings of grasses were submitted to Messrs W. O. Howarth and C. E. Hubbard, who agree with the identifications except in those cases which are indicated.)

Digitaria sanguinalis Scop. By road from St Aubin to St Brelade, Jersey, August 5, 1930. This grass, though apparently an introduction in Jersey, appears to be thoroughly naturalised there.—I. A. Williams.

Phleum pratense L., f. *nodosum* L. Little Orme, Llandudno, Carnarvon, July 23, 1931. Also from Great Orme.—H. Foster.

Agrostis nigra With. Near Richmond, Surrey, v-c. 17, July 27, 1931.—J. Fraser. "Probably the same as *Agrostis stolonifera*, var. *gigantea* Koch."—Hubbard.

Polypogon monspeliensis Desf. Waste ground, Avonmouth, W. Gloster, v.-c. 34, July 20, 1931.—Miss I. M. Roper. "Yes; grows mostly on wet sand by the sea and sometimes inland."—Fraser. "Yes; in Dorset it grows (or grew) in damp hollows among sand-hills but in Hampshire it is indigenous in salt marshes. At Avonmouth it would no doubt be an adventive."—Hall.

Holcus mollis L., forma. Dunsfold Common, Surrey, August 3, 1931. Only a form, of course, but it presented a very peculiar appearance growing in large patches with its small patent leaves."—W. **BIDDISCOMBE.** "Yes, a remarkably reduced form or state of *H. mollis*, both as regards the stem, leaves and panicle."—**FRASER.** " = *Holcus mollis* L."—**HUBBARD.**

Avena pubescens Huds. Chalfont Park, Bucks, July 1931.—G. C. **DRUCE.** "*Avenastrum pubescens* (Huds.) Jess."—**HUBBARD.**

Koeleria britannica Domin. Great Orme's Head, Carnarvon, July 7, 1931.—H. **FOSTER.**

Poa Chaixii Vill. Vernham Dean Rectory, N. Hants, June 6, 1931. Growing amid *Prunus Lauro-cerasus* and other planted shrubs.—G. C. **DRUCE.**

Poa alpina L. Ingleborough, alt. 2200 ft., West Yorks, v.-c. 64, July 5, 1931.—W. A. **SLEDGE.**

Glyceria declinata Bréb. Wet lane to Cocket Moss, near Settle, West Yorks, v.-c. 64, July 2, 1931.—W. A. **SLEDGE.** "The lower flowering glume ends in three teeth, and is more or less lined with purple below the tips, and the sheaths are smooth as required for this species."—**FRASER.**

Glyceria distans (L.) Wahl. Bank of River Rhymney, Cardiff, v.-c. 41, September 6, 1931.—A. E. **WADE.** " = *Puccinellia distans* (L.) Parl."—**HUBBARD.**

Glyceria distans Wahl. Hornsea Sands, E. Yorks, June 10, 1931.—R. **BULLEY.** " = *Puccinellia distans* (L.) Parl."—**HUBBARD.**

Glyceria maritima Wahl. Hornsea Sands, E. Yorks, June 10, 1931.—R. **BULLEY.** " = *Puccinellia maritima* (Huds.) Parl."—**HUBBARD.**

Festuca rigida (L.) Kunth. Llandudno, Carnarvon, July 6, 1931.—H. **FOSTER.** "This plant is *F. Rottboellioides* Kunth."—**HOWARTH.** " = *Catapodium loliaceum* (Huds.) Link."—**HUBBARD.**

Festuca elatior L., forma *vegeta*. [2472]. Near Maltings, Hythe Quay, Colchester, N. Essex, v.-c. 19, September 4, 1931.—G. C. **BROWN.** "I prefer to follow Hackel's arrangement, which makes *F. elatior* L. an aggregate species, including *F. pratensis* Huds. and *F. arundinacea* Schreb. Then Mr Brown's plant would come under the latter species."—**HOWARTH.** " = *Festuca elatior* L."—**HUBBARD.** "I do not see the need for saying forma *vegeta*. It is quite capable of making a large tussock where not cut or eaten down. It may often be seen of large size on river banks."—**FRASER.**

Bromus pratensis Ehrh. = *B. commutatus* Schrad. In a sainfoin field, near Headley, Surrey, September 26, 1931. A secondary autumnal growth. This is the arable land form, with (usually) very large spikelets, which I have also seen elsewhere (*e.g.*, in Essex). It looks rather different from the form which grows in meadow-land, as, for example, in Chertsey Mead, Surrey.—I. A. WILLIAMS. "The spikelets and florets are larger than those of *B. racemosus* L."—HUBBARD.

Bromus interruptus Druce. Near Headley, Surrey, July 17, 1931. Material rather poor, I fear. Judging by the amount of it there was in a stack of hay cut from the field, this grass must have been very plentiful there this year; but all that remained on July 17, when the crop had already been cut, were some withered plants on the borders of the field, and a few small secondary shoots from plants of which the earlier shoots had been mowed down.—I. A. WILLIAMS.

Lolium perenne L., forma *cristatum* Döll. [C.29]. Hanworth, Middlesex, August 22, 1931. These specimens are especially interesting in that both the normal flower spikes and those of "form *cristatum* Döll" occurred on the same plant. The variation is apparently purely teratological.—J. E. LOUSLEY. "Yes; the form with shortened compacted spikes."—FRASER.

Hordeum jubatum L. Waste ground, Leyton and Rainham, S. Essex, v.-c. 18, July and October 1927.—Coll. J. E. COOPER, comm. G. C. BROWN. "Yes; fine specimens of the Maned Barley, but not British." —FRASER.

Equisetum palustre L., var. nov. *simulans* Druce (see *Rep. B.E.C.*, p. 573, 1931), Braunton, N. Devon, July 18, 1931.—G. C. DRUCE. "My specimens have few or none of the usual lateral or cauline branches, but produce 3-5 long, naked branches from the base, simulating as many stems, and some of them are fruiting."—FRASER.

Hymenophyllum tunbridgense Sm. In wooded ravine, Ceunant Llenyrch, near Maentwrog, Merioneth, v.-c. 48, August 19, 1931. Very fine and abundant locally.—A. WILSON. "Correctly named I have got a nice fruiting specimen."—FRASER.

Azolla Filiculoides Lam. Rhine, Moor Lane, East Clevedon, N. Somerset, v.-c. 6, April 16, 1931. About five years ago a small quantity of *Azolla* was wrapped in paper round a pebble and thrown into an ornamental pond in a field separated from the rhine by a stream. The plant flourished most luxuriantly and has this year "escaped" over the stream and taken possession of a rhine on Kenn Moor. I send this explanation to forestall the not improbable publication of a N.C.R.—Miss I. M. ROPER. "Yes; highly coloured. The white edges of the leaves have become red, the rest crimson by exposure."—FRASER.

Nitella opaca Agardh. [C.43]. Llyn Idwal, Carnarvonshire, June 20, 1931.—J. E. LOUSLEY.

American plants contributed by Prof. F. S. BEATTIE, Lowell, Mass., U.S.A.:—*Viola conspersa* Reichb., *Aronia nigra* (Willd.) Brett., *Fragaria virginica* Duch., *Aster laevis* L., *Osmunda Claytoniana* L., *Aster cordifolius* L., *Saxifraga pennsylvanica* L., *Smilax herbacea* L., *Acer spicatum* Lam., *Chrysopsis falcata* (Pursh) Ell., *Erechtites hieracifolia* (L.) Raf., var. *praealta* Fern., *Echinocystis lobata* (Mx.) T. & G., *Eupatorium pubescens* Muhl., *Aster acuminatus* Mx.

Packets of seeds contributed by Mr J. E. LITTLE:—*Fumaria parviflora* Lam., *Lepidium ruderale* L., *Geranium rotundifolium* L., *Scabiosa Succisa* L., *Matricaria Chamomilla* L., *Atriplex hastata* L., *Rumex conglomeratus* Murr., *Rumex rupestris* Le Gall., *Carex leporina* L.

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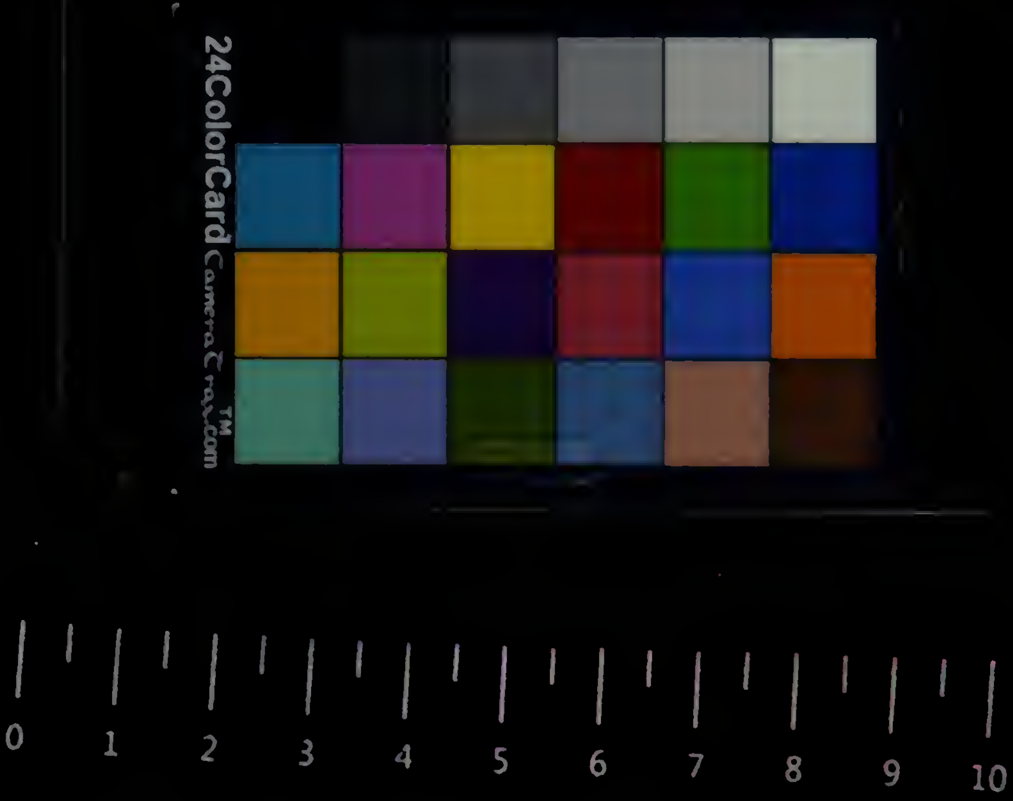
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